

BEST BOOK

50

PERCENT

SYLLABUS

VERSION

1.7

SAKET SHARMA

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This e-book has been meticulously designed to assist UGC NET/JRF aspirants in their preparation. While every effort has been made to ensure the accuracy and completeness of the information contained herein, the author and publisher assume no responsibility for errors, omissions, or discrepancies. Users are advised to verify the information and adapt it according to their specific needs and requirements. This e-book is intended as a supplementary resource and should be used in conjunction with other study materials and resources.

About this E-book:

This e-book is specially crafted for UGC NET/JRF aspirants but is also beneficial for candidates preparing for other competitive exams in the library profession, such as:

- ISRO
- BHU
- Delhi University
- NVS
- KVS
- DRDO

Features:

- Comprehensive coverage of 50 percent of the UGC NET syllabus and suitable for other Competitive Exams.
- Information presented in an easy-to-understand tabular format.
- Designed to enhance daily learning and practice.

Guidance for Use:

For optimal results, it is recommended to read this e-book daily while consistently attempting multiple choice questions (MCQs). This practice will reinforce your knowledge and improve your exam readiness.

Note: This e-book is version 1.7 release and may undergo future updates. Stay informed about new versions and additional resources that may be available to further aid your preparation.

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DEVELOPMENT IN LIBRARIES (UNITED KINGDOM)

- 1st Library act National Level in the world- 14 August 1850
- Public Library and Museum Act-1964
- UGC-UK (Parry Committee Report)-1964

Various Reports

- Adams Report-1915
- Mitchell & Kenyon Report-1924
- Mc Colvin Report-1942
- Robert Report-1959

DEVELOPMENT IN LIBRARIES (UNITED STATES OF AMERICA)

- Pioneer of Social Libraries- Benjamin Franklin
- Boston Public Library Act-1848
- 1st General library Law-1956
- Library of Congress-1800
- Library of Congress Shared Cataloguing service-1901

National Libraries of the worlds

- State Lenin Library, Moscow 1862
- National Library of India- 1835
- Bibliothec Nationale, Paris (National Library, France) 1440
- National Diet Library, Japan 1948
- National Library, Germany 1912
- Library of Congress, USA 1800

LIBRARY ASSOCIATIONS WORLD AND INDIA

- Library Association (UK)-1877 now Known as Chartered institute of Library and Information Professionals (From 2002) 1877 (now name changed in 2002 as CILIP)
- American Library Association- 1876
- Association of Special Libraries and Information Beureaux -ASLIB 1924 (The organization ceased functioning as an independent organization in 2010, when it became a division of Emerald Group Publishing. Since 2015, ASLIB has existed only as Emerald's professional development arm
- IFLA-1927
- UBC-1974, UAP-1976
- Special Library Association (SLA) 1909
- FID 1895(as the International Institute of Bibliography (originally Institut International de Bibliographie, or IIB) by two Belgian lawyers, Paul Otlet (1868–1944) and Henri La Fontaine (1854–1943). It was popularly known as the Brussels Institute. Its headquarters was changed to The Hague after 1934. It had gone through a number of changes in name that reflect changes of conceptualization of the field in which it operates.The changes in names and years are :
- 1931 – The International Institute for Documentation (Institut International de Documentation, IID)
- 1937 – The International Federation for Documentation (Fédération Internationale de Documentation, FID)

- 1988 – The International Federation for Information and Documentation (Fédération Internationale d'Information et de Documentation, FID) The Institute was one of the sponsors of the first World Congress of Universal Documentation, held in Paris in 1937. FID was dissolved in 2002.
- UNESCO 1945
- India Library Association 1933
- IASLIC 1955
- RRLF 1972

UNESCO CONTRIBUTIONS (LIBRARY NETWORKS)

- Asia and Pacific Information Network (APIN)
- Information Society program for Latin America and The Caribbean
- (INFOLAC) 1986
- Global Network for Education in Journalism 1999
- Orbicom 1994
- UNESCO Network for Associated Library (UNAL) UNISIST Programme 1971
- LIBRARIES & LIS TRAINING IN INDIA

Imperial Library History

- Formed in 1891 by combining Secretariat libraries in Calcutta.
- Originally used by superior government officers.
- Sir Ashutosh Mukherjee donated his personal collection of 80,000 books.

National Library of India Overview

- Located in Belvedere Estate, Alipore, Kolkata, India.
- India's largest library by volume and public record. ↗ Under Ministry of Culture, Government of India.

National Library Opening

- Officially opened on 1 February 1953.
- Name changed to National Library by Imperial Library (Change of Name) Act, 1948.
- Collection transferred to Belvedere Estate. ↗ Opened to the public on 1 February 1953.

Others

- Delhi Public Library- 1951
- DRTC, Bangalore -1962
- Raja Ram Mohan Roy Library Foundation -1972
- Connemara Public Library -1890
- Khuda Baksh Oriental Public Library -1891
- Asiatic Society of Mumbai: Originated from Literary Society of Bombay, First meeting in Mumbai on 26 November 1804, Founded by Sir James Mackintosh.
- Bhandarkar Oriental Research Institute, Pune -1917
- Rampur Raza Library, Uttar Pradesh -1774, Founded by Nawab Faizullah Khan
- Sarasvati Mahal Library- 1918 (Became public Library)
- National Medical Library, New Delhi 1947 (became NML on 1st April 1966.)

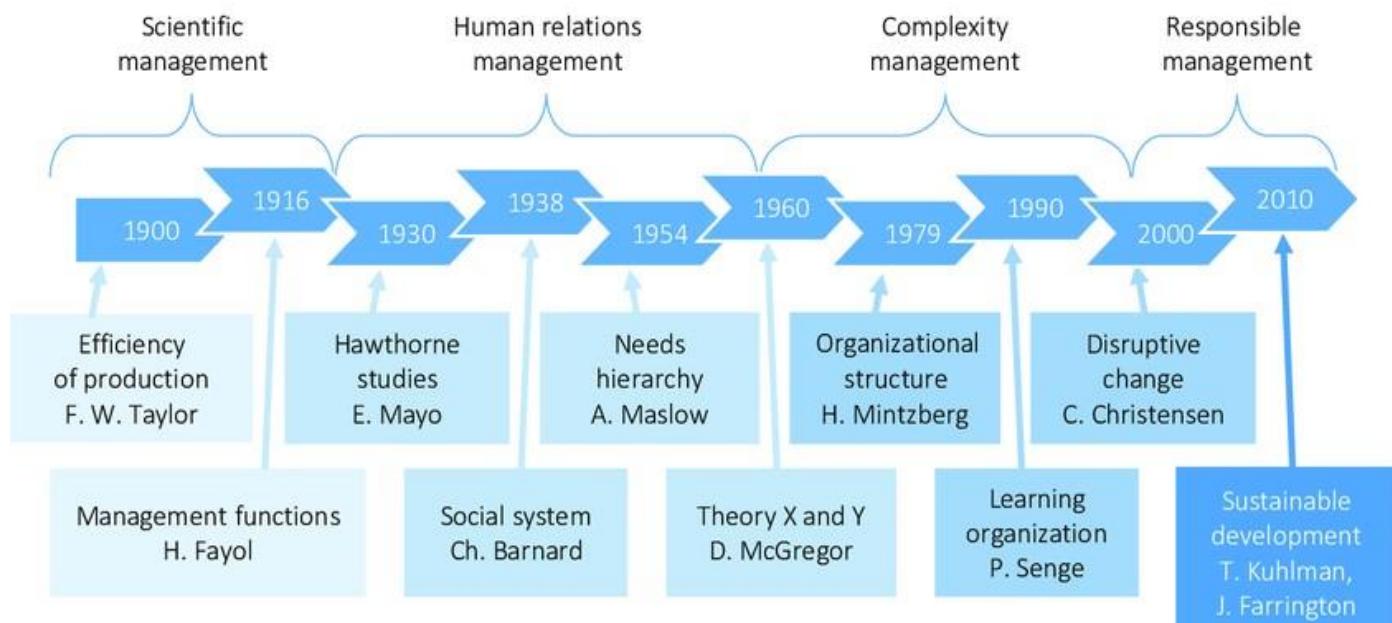
COMMITTEES ON LIS EDUCATION IN INDIA

Committee/Commission	Year	Chairperson
Hunter Commission	1882	Presided by Sir William Hunter and was appointed by Lord Ripon, the then-viceroy of India.
Indian University Commission	1902	A body appointed in 1902 on the instructions of Viceroy of India Lord Curzon intended to make recommendations for reforms in university education in India.
Saddler Commission	1917	The Sadler Commission, also known as the Calcutta University Commission, was established in 1917 by the Indian government to investigate the state of Calcutta University and recommend reform. chairmanship of Leeds University's vice-chancellor, M.E. Saddler.
Radhakrishnan Committee	1948	Chairmanship of Dr. Sarvapalli Radhakrishnan, a distinguished scholar and former vice chancellor of Banaras Hindu University and who then became the second President of India
Secondary Education Commission	1953	Dr. Lakshmana Swamy Mudaliar
University Grants Commission	1953	
Ranganathan Committee on University and College Libraries	1957	Dr. S.R. Ranganathan
Advisory Committee for Libraries (K.P. Sinha Committee)	1957	Shri K.P. Sinha
Library Committee (UGC)	1957	Dr. S.R. Ranganathan
Ranganathan Committee on LIS Education	1961	Dr. S.R. Ranganathan
Review Committee on Library Science Education (UGC)	1965	Dr. S.R. Ranganathan
Kothari Commission	1964	D.S. Kothari
National Policy on Library and Information System (CONPOLIS)	1986	Prof. D.P. Chattopadhyay
Mehrotra Committee	1983	R.C. Mehrotra
Committee on setting up of National Network in University Libraries	1988	Prof. Yash Pal
Curriculum Development Committee in LIS	1990	Prof. P.N. Kaula
Curriculum Development Committee in LIS	1997	Dr. C.R. Karisiddappa
National Knowledge Commission	2005	Sam Pitroda

National Mission on Libraries	2012	Prof. Deepak Pental
National Education Policy	29th July, 2020	Former Indian Space Research Organization chief Krishnaswamy Kasturirangan

THEORIES OF MANAGEMENT AND FOUNDERS

Theories	Founders
Principles of Scientific Management / Father of Scientific Management	F.W. Taylor
Functional Management (Command and control)/ Classical Theory, Father of Administration	Henri Fayol
Sociological Perspective / Father of Human Relation School The human relations approach is also known as New Classical approach. Elton Mayo termed it Clinical approach. It attempts to explain the informal relations among employers and employees are concerned with moral and psychological rather than legal aspects of an organization. The approach considers worker not only one of the means of production system but as a man	Elton Mayo
Theory X and Theory Y	D.M. Mc Gregor
Motivation —Hygiene Approach / Father of Corporate Strategy	F. Herzberg
Hierarchy of Needs Theory/ Motivational theory	Abraham Maslow
Bureaucratic organization	Max Weber
Management as a discipline	Peter Drucker
POSDCORB	Luther Gulick



Source: https://www.researchgate.net/figure/Evolution-of-management-theories_fig1_361067074

PHYSICAL FORMS OF LIBRARY CATALOGUES

Physical Form	Description
Printed Book Catalogue	Resembles a book or register with entries printed on separate sheets and bound together. It is easy to prepare but lacks flexibility, requiring frequent revisions. Only one user can access it at a time, but it is portable and not dependent on electricity or machinery.
Sheaf Catalogue	Consists of separate sheets (usually of manila paper) with a couple of entries printed. Sheets are loosely bound with a spiral thread or comb spine. It is similar to the book form but is more flexible and can accommodate new entries more easily, although it is voluminous and inconvenient for insertion/withdrawal.
Card Catalogue	Uses stiff paper cards for each entry (main or added). The cards are inserted into a steel rod and arranged in trays in a sequence. New entries can be added without frequent revisions, and it allows multiple users to access different trays simultaneously. It is not portable and can be cumbersome to browse.
Shelf List	A catalogue representing the order of books on the shelves. Each document title is represented by a card, which is useful for stock taking and locating books. It helps maintain the order of books in the library and ensures that each document's location on the shelf is recorded.
Computerized Catalogue	Automates cataloguing, using computers to store, retrieve, and print catalogue entries. It can generate both book-type and card-type printouts and is dynamic, highly flexible, and easy to maintain. It allows fast and accurate searching. Libraries can access OPACs (Online Public Access Catalogues) via stand-alone computers, Intranet, or the Internet.

HISTORICAL DEVELOPMENT OF NORMATIVE PRINCIPLES IN CATALOGUING

Formulation	Year	Key Canons/Principles	Notes
Formulation 1	1938	1. Canon of Consistency 2. Canon of Relevance 3. Canon of Ascertainability 4. Canon of Permanence 5. Canon of Currency 6. Canon of Prepotence	Introduced in <i>Theory of Library Catalogue</i> . Included the <i>Law of Parsimony</i> as a guiding principle.
Formulation 2	1955	7. Canon of Context 8. Canon of Purity	Added in <i>Heading and Canon</i> (1955). Canon of Relevance was renamed as <i>Canon of Sought Heading</i> .
Formulation 3	1964	General Laws: 1. Law of Interpretation 2. Law of Impartiality 3. Law of Symmetry	Published in <i>Classified Catalogue Code</i> , Ed. 5. <i>Canon of Purity</i> was omitted. <i>Canon of Individualization</i> was added.

		4. Law of Parsimony 5. Principle of Local Variation 6. Principle of Osmosis	
Formulation 4	1969	1. Canon of Recall Value 2. Principle of Unity of Idea 3. Principle of Probability	Published in <i>Library Science with a Slant to Documentation</i> (December 1969). Added new principles and canon.

S.R. Ranganathan's contributions to Library Classification

Concept	Description
Revolutionizing Library Classification	S.R. Ranganathan revolutionized the theory of classification by proposing laws, canons, and principles for classification based on facet analysis and fundamental categories.
Prolegomena to Library Classification	This seminal work by Ranganathan presents his laws, canons, and principles, forming the foundation of modern library classification.
Mapping of Universe of Knowledge	Ranganathan addressed the challenge of mapping the multi-dimensional universe of knowledge into a unidimensional classification system.
General Theory of Classification	Ranganathan developed this theory based on basic laws, laws of library science, canons, principles, and postulates to successfully represent the universe of knowledge.

Basic Laws

Ranganathan formulated six basic laws that guide thinking processes in classification:

1) Law of Interpretation	Guides the interpretation of subjects in classification.
2) Law of Impartiality	Ensures objectivity in classification.
3) Law of Symmetry	Emphasizes consistency in classification schemes.
4) Law of Parsimony	Advocates for simplicity in classification, avoiding unnecessary complexity.
5) Law of Local Variation	Allows for variations based on local needs and conditions.
6) Law of Osmosis	Reflects the permeation of ideas across different areas of knowledge.

Laws of Library Science

Ranganathan's five laws, formulated in 1928, have had a profound impact on library practices:

1) Books are for use	Books should be accessible and usable.
2) Every reader his/her book	Every reader should find a book suited to their needs.
3) Every book its reader	Every book should be found by the right reader.
4) Save the time of the reader	Libraries should facilitate quick access to books and information.
5) A library is a growing organism	Libraries evolve over time, adapting to changing needs.

Postulates for Facets

Ranganathan's key contribution was the formulation of postulates related to facet analysis and fundamental categories in classification.

Fundamental Categories (PMEST)	Ranganathan identified five fundamental categories for classification: Time, Space, Energy, Matter, Personality.
Facet Sequence	The fundamental categories are arranged in decreasing order of concreteness as: PMEST (Personality, Matter, Energy, Space, Time).

Rounds of 'Energy'	Energy can manifest multiple times in a subject, and these manifestations are called rounds.
General Theory of Levels	Personality and Matter may appear multiple times in a subject, and the first manifestation is its level 1 facet.
Principles of Facet Sequence	
Four guiding principles for arranging facets in a classification scheme:	
1) Wall-Picture Principle	Arranges facets based on their visual representation.
2) Whole-Organ Principle	Suggests that a whole entity should be treated as a single unit before breaking it down into parts.
3) Cow-Calf Principle	Specifies that one facet should lead to a dependent facet.
4) Act and Action-Actor-Tool Principle	Defines the relationship between an action, its actor, and the tool used in performing the action.

Canons of Classification: Ranganathan provided a completely new direction to the concept of classification originally formulated by Sayers. Ranganathan formulated 43 canons and grouped them into three planes of work.

- i) Canons for Idea Plane (15).
- ii) Canons for Verbal Plane (4).
- iii) Canons for Notational Plane (24).

CANONS OF CLASSIFICATION AS FORMULATED BY RANGANATHAN, GROUPED INTO THREE PLANES OF WORK

Plane of Work	Canon Category	Canon	Description
Idea Plane	Canons for Characteristics	1) Canon of Differentiation	Characteristics selected for division should be easily differentiated.
		2) Canon of Ascertainability	Characteristics must be ascertainable.
		3) Canon of Relevance	Characteristics must be relevant.
		4) Canon of Permanence	Characteristics should be permanent.
	Canons for Succession of Characteristics	5) Canon of Sequence	Sequence in which characteristics are to be applied.
		6) Canon of Hierarchy	Hierarchy or sequence of characteristics during the process of knowledge division.
		7) Canon of Application	Application of more than one characteristic in a defined order.
	Canons for Array	8) Canon of Exhaustiveness	The classes in an array should be collectively exhaustive.

		9) Canon of Mutual Exclusiveness	Classes should be mutually exclusive.
		10) Canon of Helpful Sequence	Sequence among the array classes should be helpful and consistent.
		11) Canon of Consistency	The sequence should remain consistent throughout the classification.
Canons for Chain		12) Canon of General to Specific	Division from general to specific in subordinate classes.
		13) Canon of Regulation	The division should be properly regulated.
Canons for Filiatory Sequence		14) Canon of Affiliation	Clearly identify both coordinate and subordinate classes in filiatory sequence.
		15) Canon of Sequence of Affiliation	Classes should be arranged according to their mutual affiliation.
Verbal Plane		16) Canon of Context	Terms used must clearly indicate the context.
		17) Canon of Enumeration	Terms should denote concepts in a structured manner.
		18) Canon of Currency	Terms used should be current.
		19) Canon of Reticence	Avoid unnecessary or excessive use of terminology.
Notational Plane	Basic Canons	20) Canon of Simplicity	Notations should be simple and clear.
		21) Canon of Precision	Notations should precisely represent the concepts.
		22) Canon of Continuity	Notation system should ensure continuity.
		23) Canon of Flexibility	Notations should allow for flexibility in use and expansion.
		24) Canon of Universality	Notations should be universally applicable.
	Mnemonics	25) Canon of Memorability	Notations should be easy to remember.
		26) Canon of Aesthetic Appeal	Notations should be aesthetically appealing.
		27) Canon of Uniqueness	Notations should be unique for each concept.

		28) Canon of Economical Representation	Notations should represent concepts economically (with fewer symbols).
		29) Canon of Suitability	Notations should be suitable for all contexts.
Growing Universe		30) Canon of Expansibility	Notations should accommodate expansion.
		31) Canon of Growing Classification	Notation should allow for future growth of the classification scheme.
		32) Canon of Development	Notation should support the development of the classification system over time.
		33) Canon of Diversity	Notations should allow for diverse forms and classes.
Book Classification		34) Canon of Consistency in Notation	Notations in book classification should remain consistent.
		35) Canon of Clear Identification	Notations should clearly identify the subject matter.
		36) Canon of Class Differentiation	Notations should clearly differentiate between classes in book classification.

Principles of Helpful Sequence as formulated by Ranganathan

Principle Category	Principle	Description
1. Principle of Later-in-Time	<i>Principle of Later-in-Time</i>	Entities are arranged in the order of their occurrence in time.
2. Principle of Later-in-Evolution	<i>Principle of Later-in-Evolution</i>	Entities are arranged based on their evolutionary development.
3. Principle of Spatial Contiguity	<i>Principle of Spatial Contiguity</i>	Entities should be arranged to reflect their spatial relationships.
3.1 Principles for Entities along a Vertical Line	<i>Principle of Bottom Upwards</i>	Entities along a vertical line are arranged from bottom to top.
	<i>Principle of Top Downwards</i>	Entities along a vertical line are arranged from top to bottom.
3.2 Principles for Entities along a Horizontal Line	<i>Principle of Left to Right</i>	Entities along a horizontal line are arranged from left to right.
	<i>Principle of Right to Left</i>	Entities along a horizontal line are arranged from right to left.

3.3 Principles of Entities along a Circular Line	<i>Principle of Clockwise Direction</i>	Entities along a circular line are arranged in a clockwise direction.
	<i>Principle of Counter-Clockwise Direction</i>	Entities along a circular line are arranged in a counterclockwise direction.
3.4 Principles for Entities along a Radial Line	<i>Principle of Centre to Periphery</i>	Entities along a radial line are arranged from the center towards the periphery.
	<i>Principle of Periphery to Centre</i>	Entities along a radial line are arranged from the periphery towards the center.
4. Principle of Away-from-Position	<i>Principle of Away-from-Position</i>	Entities are arranged based on their distance from a central or starting position.
5. Principle for Quantitative Measure	<i>Principle of Increasing Quantity</i>	Entities are arranged in increasing order of quantity.
	<i>Principle of Decreasing Quantity</i>	Entities are arranged in decreasing order of quantity.
6. Principle of Increasing Complexity	<i>Principle of Increasing Complexity</i>	Entities are arranged in increasing order of complexity.
7. Principle of Canonical Sequence	<i>Principle of Canonical Sequence</i>	Entities are arranged in a standard or accepted order.
8. Principle of Literary Warrant	<i>Principle of Literary Warrant</i>	Entities are arranged based on their literary or conceptual support for being together in the sequence.
9. Principle of Alphabetical Sequence	<i>Principle of Alphabetical Sequence</i>	Entities are arranged in alphabetical order.

DESCRIPTIVE THEORY IN LIBRARY CLASSIFICATION

Contributor	Contribution & Key Principles
Descriptive Theory	First stage in library classification; based on practices of existing schemes before the 1950s, with designers relying on natural skill rather than objective theories. Key contributors: Brown, Richardson, Hulme, Sayers, Bliss, and Ranganathan.
J.D. Brown	Introduced multiple schemes; known primarily for the "Subject Classification" (1906). Proposed the "One Place Theory" (each subject has only one place) and "Science and Applications Theory" (placing subjects near their source science). His subject-based, non-disciplinary approach was an experiment that ultimately didn't succeed.
E.C. Richardson	First librarian to systematize library classification theories in "Classification, Theoretical and Practical" (1910). Proposed "Criteria of Classification" which include historical order, detailed division, likeness, and unlikeness grouping, use-driven classification, and a flexible notation system.
E.W. Hulme	Divided classifications into "Mechanical" and "Philosophical." Emphasized "Literary Warrant" (inclusion of subjects only if literature exists). Influenced later classification systems like the Library of Congress Classification.

W.C.B. Sayers	Developed "Canons of Classification" (29 principles across six categories), focusing on systematic organization and clear definitions in classification. He emphasized terms being unambiguous and consistent. His principles helped shape future classification scheme designs.
H.E. Bliss	Advanced the scientific, philosophical, and logical foundations for bibliographic classification in "Organization of Knowledge and the System of Science" (1929), contributing major theoretical underpinnings for library science.

NATIONAL AND INTERNATIONAL INSTITUTIONS WITH ESTABLISHMENT YEAR

Organization	Year	Additional Information
CSIR — Council of Scientific and Industrial Research	1942	CSIR was established in September 1942.
FAO - Food and Agriculture Organisation	1945	FAO was founded on 16 October 1945.
UNESCO - United Nations Educational Scientific Cultural Organization	1945	UNESCO was founded in 1945.
UGC - University Grants Commission	1953	UGC came into existence on 28 December 1953 and became a statutory Organization of the Government of India by an Act of Parliament in 1956.
IAEA - International Atomic Energy Agency	1957	IAEA was created in 1957.
ICSSR - Indian Council For Social Science Research	1969	ICSSR was established in 1969.
WIPO - World Intellectual Property Organization	1970	WIPO was formally created by the Convention Establishing the World Intellectual Property Organization, which entered into force on 26 April 1970.
UNISIST - United Nations International Scientific Information System	1971	The UNISIST model of information dissemination was proposed in 1971 by the United Nations.

BOOKS AND AUTHORS

Title	Author
Elements of Library Classification	S.R. Ranganathan
Library Administration Theory and Practice	R.L. Mithal
Cataloguing Theory and Practice	C.G. Viswanathan
Rules for Dictionary Catalogue	C.A. Cutter
Little Science Big Science	D.J. Desolla Price
Documentation	S.C. Bradford
Subject Approach to Information	D.J. Foskett

Manual of Library Economy	N.R. Look
Documentation and its Facets	S.R. Ranganathan
Manual of Cataloguing Practice	C.G. Viswanathan

LIBRARY LEGISLATION WITH YEAR

S. No.	State	Act Year
1	Tamilnadu	1948
2	Andhra Pradesh	1960
3	Karnataka	1965
4	Maharashtra	1967
5	West Bengal	1979
6	Manipur	1988
7	Haryana	1989
8	Kerala	1989
9	Mizoram	1993
10	Goa	1993
11	Gujarat	2001
12	Odisha	2001
13	Uttarakhand	2005
14	Rajasthan	2006
15	Uttar Pradesh	2006
16	Bihar	2008
17	Chhattisgarh	2008
18	Arunachal Pradesh	2009
19	Telangana	2015

CLASSIFICATION SCHEMES

S. N.	Classification Schemes	Founder	Year
1	Dewey Decimal Classification (DDC)	Melvil Dewey	1876
2	Colon Classification (CC)	S.R. Ranganathan	1933
3	Universal Decimal Classification (UDC)	FID	1905
4	Library of Congress Classification	Library of Congress	1904
5	Subject Classification (SC)	J.D. Brown	1906
6	Expansive Classification (EC)	Cutter C.A.	1879/1891
7	Bibliographic Classification (BC)	Bliss H.E.	1935
8	International Classification (IC)	F. Rider	1961
9	Library Bibliographic Classification (LBK)	Lenin Library Moscow	1959
10	Broad System of Ordering (BSO)	FID/Unesco	1978

HISTORY OF CATALOGUING RULES

History of Library Catalogs: Key Points

- 2500 BCE: Earliest evidence of categorization in clay tablets from Mesopotamia.
- 7th century BCE: Assyrian library uses a classification system.
- 3rd century BCE: Library of Alexandria has a partial catalog ("Pinakes").
- 3rd century AD: Chinese Imperial Library has a catalog listing 30,000 items.
- 11th century: First Islamic library catalogs list donated books by donor.
- 14th century: Vatican Library creates first catalog using topical arrangement.
- 1290: Sorbonne library pioneers' alphabetical organization.
- 700 BCE: Assyrians follow cataloging rules established by Babylonians.
- 7th century BCE: Babylonian Library of Ashurbanipal led by librarian Ibnissaru implements subject-based cataloging.
- 1290: Sorbonne library in Paris becomes the first to alphabetically list titles under subjects.
- 1780: Gottfried van Swieten introduces the world's first card catalog as Prefect of the Imperial Library, Austria
- Seventh century BCE, the royal Library of Ashurbanipal at Nineveh had 30,000 clay tablets, in several languages, organized according to shape and separated by content. Assurbanipal sent scribes to transcribe works in other libraries within the kingdom.
- Third century BCE, Pinakes by Callimachus at the Library of Alexandria was arguably the first library catalog.
- 9th century: Libraries of Carolingian Schools and monasteries employ library catalog system to organize and loan out books.
- 10th century: The Persian city of Shiraz's library had over 300 rooms and thorough catalogs to help locate texts these were kept in the storage chambers of the library, and they covered every topic imaginable.
- 1246: Library at Amiens Cathedral in France uses call numbers associated with the location of books.
- 1542–1605: The Mughal emperor Akbar was a warrior, sportsman, and famous cataloger. He organized a catalog of the Imperial Library's 24,000 texts, and he did most of the classifying himself.
- 1595: Nomenclator of Leiden University Library appears, the first printed catalog of an institutional library.
- Renaissance Era: In Paris, France the Sorbonne Library was one of the first libraries to list titles alphabetically based on the subject they happened to fall under. This became a new organization method for catalogs.
- Early 1600s: Sir Thomas Bodley divided cataloging into three different categories. History, poesy, and philosophy.
- 1674: Thomas Hyde's catalog for the Bodleian Library.
- 1791: The French Cataloguing Code of 1791
- 1815: Thomas Jefferson sells his personal library to the US government to establish the Library of Congress. He had organized his library by adapting Francis Bacon's organization of knowledge, specifically using Memory, Reason, and Imagination as his three areas, which were then broken down into 44 subdivisions.
- 1874/1886: Breslauer Instructionen (English: Wroclaw instructions) by Karl Dzitzko
- 1899: Preußische Instruktionen (PI) (English: Prussian instructions) for scientific libraries in German-speaking countries and beyond
- 1932: DIN 1505

- 1938: Berliner Anweisungen (BA) (English: Berlin instructions) for public libraries in Germany
- 1961: Paris Principles (PP), internationally agreed upon principles for cataloging
- 1967: Anglo-American Cataloguing Rules (AACR)
- 1971: International Standard Bibliographic Description (ISBD)
- 1976/1977: Regeln für die alphabetische Katalogisierung (RAK) (English: Rules for alphabetical cataloging) in Germany and Austria.

TYPES OF CATALOGUES

- **Author Catalog:** Alphabetically sorted catalog based on names of authors, editors, illustrators, etc.
Example: A catalog listing books by J.K. Rowling, Stephen King, and Jane Austen, sorted alphabetically by their last names.
- **Subject Catalog:** Catalog organized by subject matter.
Example: A catalog grouping books about "World War II," "Biographies," and "Computer Science" together for easy access.
- **Title Catalog:** Alphabetically arranged catalog based on the titles of entries.
Example: A catalog listing books such as "To Kill a Mockingbird," "The Great Gatsby," and "Harry Potter and the Sorcerer's Stone" in alphabetical order by title.
- **Dictionary Catalog:** All entries (author, title, subject, series) interfiled in a single alphabetical order, common in North American libraries before computer-based catalogs.
Example: A catalog where entries for books like "1984" by George Orwell, "Animal Farm" by George Orwell, and "Orwell: The Authorized Biography" by Michael Shelden are all listed in one alphabetical order.
- **Keyword Catalog:** Subject catalog sorted alphabetically by keywords.
Example: A catalog where books on "Environmentalism," "Climate Change," and "Sustainability" are arranged alphabetically by keywords associated with each topic.
- **Mixed Alphabetic Catalog Forms:** Combination catalogs such as author/title or author/title/keyword.
Example: A catalog combining author/title, where books by J.R.R. Tolkien are listed under "Tolkien, J.R.R." with titles like "The Hobbit" and "The Lord of the Rings."
- **Systematic Catalog:** Subject catalog sorted by systematic subdivision of subjects, also known as a Classified catalog.
Example: A catalog sorting books on "Biology," "Chemistry," and "Physics" into systematic subdivisions within the science section.
- **Shelf List Catalog:** Formal catalog with entries arranged in the same order as items are shelved, often serving as the primary inventory for the library.
Example: A catalog mirroring the physical arrangement of books on library shelves, where entries correspond to the order in which books are placed on shelves.

HISTORY OF ISBD PUBLICATIONS WITH YEARS

- **1969:** IFLA Committee on Cataloguing sponsors an International Meeting of Cataloguing Experts, proposing the creation of standards for bibliographic descriptions.
- **1971:** International Standard Bibliographic Description for Monographic Publications (ISBD(M)) is published.

- **1973:** ISBD(M) is adopted by several national bibliographies and utilized by cataloguing committees for drafting rules.
- **1974:**
- Revised edition of ISBD(M), known as the "First standard edition," is published due to user feedback. International Standard Bibliographic Description for Serials (ISBD(S)) is published.
- **1975:** Joint Steering Committee for Revision of the Anglo-American Cataloguing Rules proposes the development of a general international standard bibliographic description for all types of library materials.
- **1977:** International Standard Bibliographic Description for General Materials (ISBD(G)) is published.
- **1978:** ISBD(M) is revised to align with ISBD(G), resulting in the publication of the "First standard edition revised."
- **1977:** ISBDs for specific materials are published: ISBD(CM) for cartographic materials, ISBD(NBM) for non-book materials, and a revised ISBD(S) for serials.

Important decisions regarding the ISBD program are made at the IFLA World Congress in Brussels.

- **1980:** ISBD(A) for older monographic publications and ISBD(PM) for printed music are published.
- **1981:** ISBD Review Committee is formed to plan for reviewing and revising the ISBDs.
- **1987:** ISBD(M), ISBD(CM), and ISBD(NBM) are republished.
- **1990:** ISBD(CF) for computer files is published, later becoming ISBD(ER) for electronic resources in 1997.
- **1992:** Study Group on the Functional Requirements for Bibliographic Records (FRBR) is set up by the IFLA Section on Cataloguing.
- **2002: ISBD(S) revised to ISBD(CR) for serials and other continuing resources, harmonized with ISSN guidelines and AACR2.** Revised editions of ISBD(M) and ISBD(G) are published.
- **2003:** Study Group on Future Directions of the ISBDs formed at the Berlin IFLA Conference. Decision made to consolidate all ISBDs into a single text for ease of use and consistency.
- **2004:** Revised edition of ISBD(G) is published.
- **2006:** Revision process for ISBD(A) takes place.
- **2007:** A preliminary consolidated edition of ISBD is established, collocating related provisions from each ISBD into a new structure. Changes made to prescribed punctuation to improve interoperability between bibliographic retrieval systems and display formats.

2011 Consolidated Version:

- ISBD Review Group shifts focus to maintaining the consolidated edition, which supersedes individual ISBDs, considering changes in national and multinational cataloguing codes.
- Concerns raised about the confusing mix of physical format, class of material, form of carrier, and notation within GMD terms.
- Proposal drafted for a content/carrier component for ISBD, influenced by RDA/ONIX Framework and subsequent drafts of RDA: Resource Description & Access.
- Documents such as version 1.0 of the RDA/ONIX Framework for Resource Categorization (August 2006) are instrumental in shaping the work of the study group.

2021: Consolidated Version of ISBD: Update of 2011 Consolidated Version

- Ten years after the publication of the ISBD Consolidated Edition of 2011, the ISBD Review Group initiates a revision of the ISBD Standard to address various pressing goals.

Source: <https://www.ifla.org/g/isbd-rg/isbd-editions/>

INDEXING SYSTEMS/ ORIGINATORS AND YEARS

Indexing System	Inventor	Year
Citation Indexing	A. Garfield	1955
Subject Indexing	M.E. Sears	1923
Automated Indexing	H. Ohlman	1957
SLIC Indexing	J.R. Sharma	1966
Thesaurus Indexing	P.M. Rogget	29 April 1852
Systematic indexing	Kaiser, J.	1911
Chain Indexing	Dr. S.R. Rangnathan	1934
Uniterm Indexing	M. Taube	1953
Key Word Indexing	H.P. Luhn	1959
PREserved Context Indexing System	Derik Austin	1974
Postulate Based Permuted Subject Indexing (POPSI)	G. Bhattacharya	1969
COMPASS	BNB	1991

MAJOR CITATION INDEX CONTRIBUTION BY EUGENE GARFIELD

Year	Event Description
1955	Eugene Garfield introduces the concept of citation indexing for the sciences.
1960	ISI (Institute for Scientific Information) is founded.
1964	ISI produces the first Science Citation Index (SCI)
1973	Social Sciences Citation Index (SSCI)™ is introduced
1976	Journal Citation Reports™ is introduced, collating journal-to-journal citations
1978	Arts & Humanities Citation Index (AHCI)™ is introduced.
1960	ISI introduces Index Chemicus, its first offering focusing on the chemical sciences.
1976	Journal Citation Reports™ includes indicators such as the Journal Impact Factor™.

PRE-COORDINATE INDEXING

Indexing System	Inventor	Year
Kaiser's Systematic Indexing	Kaiser, J.	1911
Chain Indexing	Dr. S.R. Rangnathan	1934
Relational Indexing	J.E.L. Farradane	1950
Coats Subject Indexing	E.J. Coats	1963
PRECIS	Derek Austin	1974
POPSI	G. Bhattacharya	1969

LIST OF POST-COORDINATE INDEXING SYSTEMS

List of Post-Coordinate Indexing Systems

- UNITERM
- Optical Coincidence Card / Peek-a-boo

- Edge-Notched Card
- Post-Coordinate Searching Devices

YEAR OF PUBLICATION: INDEX

Indexing System	Year of Publication
Science Citation Index	1974
Social Science Citation Index	1973
Arts & Humanities Citation Index	1978

INFORMATION SYSTEMS AND ORGANISATIONS

Organization	Place	Year
International Federation for Documentation (FID)	Hague	1895
International Federation of Library Association and Institutions (IFLA)	Scotland	1927
International Council of Scientific Union (ICSU)	Brussels	1931
University Grant Commission (UGC): - formally inaugurated by late Shri Maulana Abul Kalam Azad, the then Minister of Education, Natural Resources and Scientific Research on 28 December 1953. The UGC, however, was formally established only in November 1956 as a statutory body of the Government of India through an Act of Parliament for the coordination, determination, and maintenance of standards of university education in India.	New Delhi	1953
International Atomic Energy Agency (IAEA)	Vienna	1957
Defense Research & Development Organization	New Delhi	1958
Documentation Research & Training Center (DRTC)	Bangalore	1962
World Intellectual Property Organization (WIPO)	Geneva	1967
Bhabha Atomic Research Center (BARC) Dr. Homi Jehangir Bhabha, born on October 30, 1909, is regarded as the Father of India's Nuclear Program. In 1945, he established the Tata Institute of Fundamental Research (TIFR) to promote nuclear science research. To further advance the nation's nuclear ambitions, he founded the Atomic Energy Establishment, Trombay (AEET) in January 1954, focusing on multidisciplinary research essential for exploiting nuclear energy. After his untimely demise on January 24, 1966, AEET was renamed the Bhabha Atomic Research Centre (BARC) in his honor.	Mumbai	1967
International Nuclear Information System (INIS)	Vienna	1970
Agricultural Information System of FAO (AGRIS)	Rome	1975
Patent Information System (PIS)	Nagpur	1980

LIST OF IMPORTANT PROGRAMMING LANGUAGE WITH THEIR FOUNDER

Language	Creator/Developer	Year
Python	Guido van Rossum	1991
Ruby	Yukihiro Matsumoto	1993
Java	James Gosling	1995
C	Dennis M. Ritchie	1972
C++	Bjarne Stroustrup	1985
PHP	Rasmus Lerdorf	1994
Perl	Larry Wall	1987
JavaScript	Brendan Eich	1995
Pascal	Niklaus Wirth	1970
Lisp	John McCarthy	1958

LIST OF COMMUNICATION MODELS

Model	Founder(s)	Year	Brief Information
Aristotle's Model	Aristotle	4th Cen. BCE	Aristotle's model emphasizes persuasion through rhetoric and the three modes of persuasion: ethos, pathos, and logos.
Lasswell's Model	Harold Lasswell	1948	Lasswell's model focuses on answering five key questions in the communication process: Who, Says What, In Which Channel, To Whom, With What Effect.
Shannon - Weaver Model	Claude Shannon and Warren Weaver	1949	The Shannon-Weaver model is a mathematical theory of communication, highlighting the elements of sender, message, channel, receiver, and feedback.
Berlo's S-M-C-R Model	David Berlo	1960	Berlo's model involves four components: Source, Message, Channel, Receiver, emphasizing the role of encoding and decoding in communication.
Barnlund's Transactional Model	Dean C. Barnlund	1970	This model views communication as a dynamic and ongoing process, with both parties acting as senders and receivers, exchanging messages simultaneously.
Dance's Helical Model	Frank Dance	1970	Dance's model suggests that communication is an ever-changing spiral process, with each interaction influencing future interactions in a continuous cycle.

Osgood - Schramm Model	Charles E. Osgood and Wilbur Schramm	1954	Osgood and Schramm's model emphasizes the role of feedback in communication and the concept of encoding and decoding messages.
Westley and Maclean Model	Bruce Westley and Malcolm Maclean	1957	This model introduces the concept of communication as a process involving various gatekeepers, with feedback loops influencing subsequent messages.
Linear Model	Harold D. Lasswell	1948	The linear model sees communication as a one-way process from sender to receiver, often oversimplifying the complexity of real-world communication.
Transactional Model	Harold D. Lasswell (contributed)	1960s	This model, associated with scholars like Harold D. Lasswell, views communication as an exchange where both parties play active roles, constantly influencing each other.
Interactive Model	Wilbur Schramm	1954	The interactive model emphasizes a two-way communication process, with feedback playing a crucial role in clarifying and improving the communication.

COPYRIGHT ACTS

Name	Year	Short Info
Berne Convention	1886	An international treaty establishing the basic principles of copyright protection.
British Copyright Act	1911	Legislation in the United Kingdom governing copyright.
Copyright Law in India (Pro-independence)	1914	Early copyright legislation in India during the pre-independence period.
Universal Declaration of Human Rights	1948	Emphasizes the right to participate in cultural life, which has implications for copyright.
Universal Copyright Convention	1951	An international copyright treaty provides a framework for copyright protection.
Copyright Act of the United Kingdom	1956	Legislation in the United Kingdom further shaping copyright laws.
Indian Copyright Act	1957	Legislation in India governing copyright.
Rome Convention	1961	An international treaty protecting the rights of performers and producers of phonograms.
WIPO Copyright Treaty	1996	An agreement under the World Intellectual Property Organization addressing challenges of the digital age.
Digital Millennium Copyright Act	1998	A U.S. law addressing copyright issues arising from the digital environment.

Information Technology Act (India)	2000	Legislation in India dealing with various aspects of electronic commerce, including copyright.
Right to Information Act (India)	2005	Legislation in India providing citizens with the right to access information held by public authorities.

S.R RANGANATHAN (LIST OF BOOKS)

Book Title	Pub. Year
The Five Laws of Library Science	1931
Colon Classification (1st ed.)	1933
Classified Cataloguing Code	1934
Library Administration (first published)	1935
Prolegomena to Library Classification	1937
Theory of the Library Catalogue	1938
Colon Classification (2nd ed.)	1939
Elements of Library Classification	1945
Suggestion for the organization of the Libraries in India	1946
Classification and International Documentation	1948
Colon Classification (3rd ed.)	1950
Classification and Communication	1951
Philosophy of Library Classification	1951
Library Manual	1951
Library Book Selection	1952
Colon Classification (4th ed.)	1952
Headings and Canons 1955	1955
Prolegomena to Library Classification (2nd ed.)	1957
Colon Classification (5th ed.)	1957
Colon Classification (6th ed.)	1960
Reference Service	1961
Documentation and its facets	1963
Library Book Selection (2nd ed.)	1966
Prolegomena to Library Classification (3rd ed.)	1967
Ramanujan: The man and the mathematician	1967
Documentation: Genesis and Development	1973
A Librarian Looks Back: An autobiography of Dr. S. R. Ranganathan (Editor: P. N. Kaula)	1992

SHORT NOTES INFO ABOUT S.R RANGANATHAN SIR

Note: Revise this section of S.R Ranganathan Sir accordingly to your need revision time (after each one week At least)

- Full Name: Shiyali Ramamrita Ranganathan
- Birth and death Date: 9 August 1892 – 27 September 1972

Key Points:

- Born in Shiyali, Tanjavoor District, Tamil Nadu, India, in his maternal grandfather's house on North Rampart Street during Gayathri Japam day in the month of Adi of the year Nandana.
- Married Rukmini at the age of fifteen in 1907, but she tragically died in an accident in 1928.
- Ranganathan remarried Sarada in December 1929, who supported his endeavors in the library profession and encouraged philanthropy.
- Sarada passed away at the age of 78 in Bangalore on July 30, 1985.

Ranganathan's Sir Education Timeline:

- **1897:** Initiated education with Aksharabyasam at Ubhayavedanthapuram.
- **Early School:** Learned from Subba Ayyar, R. Antharama Ayyar, and Thiruvenkatachariar (influenced by Nayanars & Alwars teachings).
- **1908/1909:** Completed Matriculation with First Class at S.M. Hindu High School despite health challenges.
- **1909:** Joined Madras Christian College due to excellent marks and support from Prof. Skinner.
- **1913:** Completed B.A. in Mathematics with First Class.
- **1913-1916:** Pursued M.A. in Mathematics under Prof. Edward B. Ross (strong Guru-Shishya relationship).
- **1916:** Earned M.A. and aimed to become a Mathematics teacher.
- **1917:** Acquired L.T. degree in teaching technique. College Days: Developed connections with other professors like Moffat, Manickam, Sabhesan, Chinnathambi Pillai, and Subramanyam.

Ranganathan's Sir Teaching Career Timeline

1917-1921:

- Appointed Assistant Lecturer in Government Colleges at Mangalore and Coimbatore.
- Taught Physics and Mathematics.
- Championed individualized instruction with active discussions, making classes lively and interactive.
- Earned nickname "Born Teacher" for engaging style and use of anecdotes.
- Encouraged applause and student-led presentations.
- Organized seminars and colloquia.

1921-1923:

- Joined Presidency College, Madras as Assistant Professor of Mathematics.
- Taught Algebra, Trigonometry, and Statistics.
- Continued innovative teaching methods.

Extracurricular Activities:

- Secretary of Mathematics and Science Section of Madras Teacher's Guild.
- Public lectures to raise awareness.
- Advocated for standardization of exam papers and pension benefits for private school teachers.
- Supported Indian Mathematical Society financially.
- Popular figure in mathematics circles and regarded as an efficient organizer.

Work Ethic:

- Believed in focusing on work itself, not rewards.

- Quoted as saying: "Our right is only to do the work falling to our share, never to the fruits of our work. Flirt not with fruits."

Ranganathan's Sir Journey to Librarianship: A Timeline

1924:

- January: Left Presidency College for Madras University Librarian position.
- Week Later: Returned to College, seeking return due to "solitary imprisonment."
- September: Embarked on a 9-month study-cum-observation tour in England.

England:

- Met W.C. Berwick Sayers, a key influence.
- Witnessed vibrant libraries serving diverse communities.
- Discovered a social mission for libraries and himself.

1925:

- July: Returned to India with a transformed perspective.

1931:

- Sir P.S. Siva swamy Aiyar recognized Ranganathan's impact

1924-1925:

- Ranganathan focused on reorganizing the University Library in Madras, aiming to attract more readers and provide better facilities.

1928-1945:

- Ranganathan founded the Madras Library Association, expanding the library movement across the Madras Presidency.

1929:

- Initiated a school of library science under the auspices of the Madras Library Association, later taken over by Madras University.

1957:

- Donated his life savings to establish the Sarada Ranganathan Professorship in Library Science at Madras University during its centenary celebrations.

Activities at e Banaras Hindu University (1945-1947)

1945-1947:

- Invited by Vice-Chancellor Sir S. Radhakrishnan to develop the library system of Banaras Hindu University. Found the library in disarray and took on the task of reorganizing the entire collection. Single-handedly classified and cataloged approximately 100,000 books with great dedication.

Same Period:

- Conducted a Diploma Course in Library Science, showcasing his commitment to education and training in the field.

Ranganathan's Sir Flourishing Career in Delhi (1947-1955)

Teaching and Research:

- Joined Delhi University in 1947, focusing on teaching and research in library science.
- Introduced "Study Circle" and "Research Circle" meetings, fostering innovation and team research.
- The Research Circle's journal, "Annals," gained international recognition.

Leadership and Collaboration:

- Elected President of the Indian Library Association (ILA).

- Launched the combined journal "ABGILA," promoting research and collaboration.
- Held leadership positions in the International Federation for Documentation (FID).
- Drafted a 30-year plan for India's library system development.
- Chaired the Documentation Committee of the Indian Standards Institution.

National and International Impact:

- Promoted the Madras Public Library Act.
- Founded the Classification Research Group in London.
- Visited USA and wrote "Classification and Communication."

Ranganathan's Sir Time in Zurich (1955-1957)

Objectives:

- Gain firsthand knowledge of industrial documentation. ↗ Fulfill international commitments.

Achievements:

- Wrote the second edition of "Prolegomena to Library Classification."
- Regularly contributed to the "Annals of Library Science." *Activities at Bangalore*

1957:

- Moved to Bangalore.
- Assisted INSDOC, Planning Commission, and UGC as advisor.
- Gathered young librarians for research and publications.

1962:

- Founded Documentation Research and Training Centre (DRTC) in Bangalore.
- Served as Honorary Professor at DRTC (1962-1972).
- Promoted research and teaching in library and information science.

1965:

- Recognized as National Research Professor in Library Science (by Government of India).
- Awarded Doctor of Letters degrees by Delhi University and Pittsburgh University.

1961:

- Established Sarada Ranganathan Endowment for Library Science.

Later years (1967-1972):

- Focused on writing and research.
- Proposed Absolute Syntax for indexing language.
- Continued work on Colon Classification.
- Maintained active work ethic until his death in 1972.

Additional Notes:

- Ranganathan's legacy extends beyond his individual contributions, influencing a "human movement" in library science.
- He authored 60 books and 2000 articles, demonstrating a lifelong dedication to the field.
- His life and work embodied an ever-inquiring mind, influenced by philosophical principles.

All about S.R ranganathan Source: <https://www.isibang.ac.in/~library/portal/Pages/SRRBIO.pdf>

NISSAT INFORMATION CENTERS SECTORAL INFORMATION CENTERS

S.No.	Full Form	Dedicated	Place
1	NICLAI	Leather Technology	CLRI Chennai
2	NICFOS	Food Technology	CFTRI Mysore
3	NICMAP	Machine Tools and Products	Centre Machine and Tools, Bangalore
4	NICDAP	Drug and Pharmaceuticals	CDRI, Lucknow
5	NICTAS	Textiles and Allied Subjects	ATIRA Ahmedabad
6	NICHEM	Chemicals	NCL, Pune
7	NICAS	Glass and Ceramics	CGRI, Kolkata
8	NICRYS	Crystallography	Department of Crystallography and Biophysics, University of Madras
9	NCB	Bibliometrics	NISCAR, Delhi
10	NICDROM	National Aerospace	CDROM, Bangalore

NISSAT SUPPORTED NATIONAL INFORMATION CENTERS

S.No.	Information Centre	Host Institution
1	National Information Centre for Leather and Allied Industries (NICLAI)	Central Leather Institute, Chennai
2	National Information Centre for Food Sciences (NICFOS)	Central Food Technological Research Institute, Mysore
3	National Information Centre for Machine Tools and Production Engineering (NICMAP)	Central Machine Tools Institute, Bangalore
4	National Information Centre for Drugs and Pharmaceuticals (NICDAP)	Central Drug Research Institute, Lucknow
5	National Information Centre for Textiles and Allied Subjects (NICTAS)	Ahmedabad Textile Industry's Research Association (ATIRA)
6	National Information Centre for Chemistry and Chemical Technology (NICHEM)	National Chemical Laboratory, Pune
7	National Information Centre for Management (NICMAN)	Indian Institute of Management, Ahmedabad
8	National Information Centre for Marine and Aquatic Sciences (NICMAS)	National Institute of Oceanography, Goa
9	National Information Centre for Advanced Ceramics (NICAC)	Central Glass and Ceramic Research Institute, Calcutta
10	National Information Centre for Bibliometrics (NCB)	National Institute of Science Communication and Information Resources (NISCSIR), Delhi
11	National Information Centre for Crystallography (NICRYS)	University of Madras, Chennai
12	National Information Centre for CD-Rom (NICDROM)	National Aerospace Laboratory, Bangalore
13	CD-Rom National Collection Centre (NCCC)	Indian Institute of Technology, New Delhi

BIOTECHNOLOGY INFORMATION SYSTEM (BTIS)

Subject Covered	Distributed Information Centre
Genetic Engineering	- Indian Institute of Science, Bangalore - Bose Institute, Calcutta - Madurai Kamraj University, Madurai - Jawaharlal Nehru University, New Delhi
Virology and Animal Culture	Poona University, Pune
Plant Tissue Culture and Molecular Biology	IARI, New Delhi
Immunology	Indian Institute of Immunology, New Delhi
Nucleic Acid and Protein Sequencing	CCMB, Hyderabad
Oncogenesis, Reproduction Physiology	Institute of Microbial Technology, Chandigarh
Protein Modeling and Engineering	Institute of Microbial Technology, Chandigarh
Neuro Informatics	National Brain Research Centre, Gurgaon

NATIONAL ARCHIVES OF INDIA (NAI)

Aspect	Details
Establishment	March 1891, initially as the 'Imperial Record Department' in Calcutta, shifted to New Delhi in 1911, and housed in the present building since 1926.
Networking of Libraries	Five major libraries, including the NAI library, under the Ministry of Culture, are being networked.
Other Libraries Involved	- Central Secretariat Library - National Museum Library - National Gallery of Modern Art Library - Archaeological Survey of India Library

INFOTERRA IS A GLOBAL ENVIRONMENTAL INFORMATION EXCHANGE NETWORK ESTABLISHED BY THE UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

Aspect	Details
Establishment	Conceived in 1972 at the Stockholm Conference, formalized by UNEP as IRS (International Referral System), renamed INFOTERRA.
Key Events	- 1972 : Stockholm Conference initiated the need for environmental info exchange. - 1992 : Rio Conference emphasized strengthening INFOTERRA for decision-making.
Secretariat Location	UNEP Headquarters, Nairobi.
INFOTERRA Products and Services	<ol style="list-style-type: none"> 1) Query Response Service 2) Environmental Literature Availability 3) Bibliographies on Environmental Topics 4) Directories of Environmental Information Sources 5) UNEP-INFOTERRA Publications

	<p>6) ENVOC Multilingual Thesaurus 7) INFOTERRA-ISIS 8) SASIN Environmental Database 9) Information on Environment and Development (CD-ROM/Internet) 10) National Focal Point Fact Sheet Database</p>
INFOTERRA-ISIS	A database management system that helps each national focal point maintain a local directory of environmental information sources.
SASIN Database	A searchable database with over 29,000 bibliographic references from Southern African Sub-regional INFOTERRA Network member organizations.
List Servers	INFOTERRA's subscription-based email list for promoting environmental info exchange.
Services in India	India participates actively, with ENVIS (Environmental Information System) designated as the National Focal Point (NFP) for INFOTERRA since 1985, and also as the Regional Service Centre (RSC) for South Asia.

AGRIS (INTERNATIONAL INFORMATION SYSTEM FOR THE AGRICULTURAL SCIENCES AND TECHNOLOGY)

Aspect	Details
Establishment	Started in 1974 by FAO of the United Nations, fully operational since 1975 with the first issue of AGRINDEX.
Objective	To build an information system in the field of agricultural science and technology and related subjects.
Subject Areas Covered	Agriculture, forestry, food, environment, animal sciences, aquatic sciences, fisheries, human nutrition, and more.
Participating Countries	Collaborative network of agricultural institutions worldwide.
WebAGRIS	A future networking platform covering ongoing agricultural projects and research.
AGRIS AP (Application Profile)	Guidelines for the description of information objects in the agricultural sciences and technology field.
Electronic Discussion Forum	Workspace for exchanging ideas on using AGRIS AP and WebAGRIS.
AGROVOC	A multilingual agricultural thesaurus available in English, French, and Spanish. It contains descriptors and non-descriptors.
AGRIS Information Products	<ul style="list-style-type: none"> - AGRIS and CARIS on CD: Bibliographic references, CARIS Project Data, AGROVOC Thesaurus, FAO Catalogue. - AGRIS Manuals: Available for download. - AGRIS and CARIS FTP site: Available AGRIS and CARIS data. - FAO Documentation: Documents from 1980-2000 available online.
Services in India	Agricultural Research Information Centre , Indian Council of Agricultural Research, New Delhi, is the participating institution from India.

MEDLARS (MEDICAL LITERATURE ANALYSIS AND RETRIEVAL SYSTEM)

Aspect	Details
Establishment	MEDLARS was established in 1964 as a computerized storage and retrieval system.
Location	The National Library of Medicine (NLM) is located at the National Institutes of Health (NIH) in Bethesda, Maryland.
Scope	NLM is one of the largest medical libraries in the world, collecting materials on health sciences, chemistry, and physics.
Key Component	MEDLINE is the major component of MEDLARS, which contains bibliographic information available in the Index Medicus .
Access to MEDLINE	MEDLINE can be accessed through PubMed (freely available online) and the NLM Gateway .
Other NLM Resources	NLM offers several databases and resources, including: - TOXLINE - NLM Catalog - MedlinePlus - ClinicalTrials.gov - DIRLINE - Genetics Home Reference - Meeting Abstracts - HSRProj - OMIM - HSDB - NCBI Bookshelf
Indian MEDLARS Centre (IMC)	Jointly set up by NIC (National Informatics Centre) and ICMR (Indian Council of Medical Research), the IMC serves the medical community in India.
IMC Services	IMC developed a bibliographic database of Indian biomedical literature from peer-reviewed journals. It provides easy access to Indian biomedical information for medical professionals, researchers, students, and medical library professionals.

NATIONAL INSTITUTE OF SCIENCE COMMUNICATION AND INFORMATION RESOURCES (NISCAIR)

Aspect	Details
Establishment	NISCAIR was established in 1952 as INSDOC and later merged with the National Institute of Science Communication (NISCOM) in 2002 . It is now a CSIR laboratory.
Function	NISCAIR provides scientific and technical information to users in India and abroad, focusing on communication and information resources for science and technology.
Journals Published by NISCAIR	NISCAIR publishes 17 primary journals and 2 abstracting journals related to various scientific disciplines.

Primary Journals	1. Journal of Scientific and Industrial Research (monthly) 2. Indian Journal of Chemistry A (monthly) 3. Indian Journal of Chemistry B (monthly) 4. Indian Journal of Experimental Biology (monthly) 5. Indian Journal of Pure & Applied Physics (monthly) 6. Indian Journal of Biochemistry & Biophysics (bi-monthly) 7. Indian Journal of Engineering & Material Sciences (bi-monthly) 8. Indian Journal of Chemical Technology (bi-monthly) 9. Indian Journal of Radio & Space Physics (bi-monthly) 10. Journal of Intellectual Property Rights (bi-monthly) 11. Indian Journal of Marine Sciences (quarterly) 12. Indian Journal of Fibre & Textile Research (quarterly) 13. National Product Radiance (bi-monthly) 14. Indian Journal of Biotechnology (quarterly) 15. Indian Journal of Traditional Knowledge (quarterly) 16. Annals of Library and Information Studies (quarterly) 17. Bhartiya Vaigyanik evam Audyogik Anusandhan Patrika (Hindi, half-yearly)
Abstracting Journals	1. Medicinal and Aromatic Plants Abstracts (bi-monthly) 2. Indian Science Abstracts (fortnightly)

YEARS OF ORGANIZATION ESTABLISHMENT

Organization	Full Form	Year Est.
CSIR	Council of Scientific and Industrial Research	1942
ICSSR	Indian Council of Social Science Research	1969
ICMR	Indian Council of Medical Research	1969
ICHR	Indian Council of Historical Research	1971
ICPR	Indian Council of Philosophical Research	1981
ILO	International Labour Organization	1919
FAO	Food and Agriculture Organization	1945
UNESCO	United Nations Educational, Scientific and Cultural Organization	1946
WIPO	World Intellectual Property Organization	1970
DELENT	Developing Library Network	1988
INFLIBNET	Information and Library Network	1991
BONET	Bombay Library Network	1992
CALIBNET	Calcutta Library Network	1993
SUPLIS	Supreme Court Judges Library	1992
MYLIBNET	Mysore Library Network	1995
ICAR	Indian Council of Agricultural Research	1936
UGC	University Grants Commission	1953
DRDO	Defence Research and Development Organization	1958
DST	Department of Science and Technology	1971

MEDLARS	Medical Literature Analysis and Retrieval System	1964
INIS	International Nuclear Information System	1970
INFOTERRA	International Environmental Information System	1972
AGRIS	Agricultural Information Retrieval System	1974

Source:

[https://worldlibraries.dom.edu/index.php/worldlib/article/view/351/307#:~:text=The%20Bombay%20Library%20Network%20\(BONET,Network%20is%20sponsored%20by%20NISSAT.](https://worldlibraries.dom.edu/index.php/worldlib/article/view/351/307#:~:text=The%20Bombay%20Library%20Network%20(BONET,Network%20is%20sponsored%20by%20NISSAT.)

DEFENCE SCIENTIFIC INFORMATION AND DOCUMENTATION CENTRE (DESIDOC)

Aspect	Details
Name	Defence Scientific Information and Documentation Centre (DESIDOC)
Establishment	1958 (as Scientific Information Bureau, a division of Defence Science Laboratory)
Reorganization & Renaming	1967 (renamed as DESIDOC)
Independence	1970 (became an independent unit under DRDO)
Location	Initially in Metcalfe House, later moved to a new building in the same complex in 1988
Parent Organization	Defence Research and Development Organisation (DRDO)
Publications	1) Defence Science Journal 2) Popular Science & Technology 3) DRDO Newsletter 4) DRDO Samachar 5) R&D Digest 6) Technology Focus 7) DESIDOC Bulletin of Information Technology

UNITED NATIONS EDUCATIONAL SCIENTIFIC AND CULTURAL ORGANISATION (UNESCO) PROGRAMS

Aspect	Details
ORBICOM	An international network linking communications leaders from academic, media, corporate, and government sectors for exchanging information and developing shared projects.
UNAL	Established in 1990, promotes cooperation among public libraries to build international understanding and establish contacts between libraries of the North and South.
APIN (Asia and Pacific Information Network)	Merges three regional networks: 1) ASTINFO (Regional Network for the Exchange of Information and Experiences in Science and Technology in Asia and the Pacific) 2) RINSEAP (Regional Informatics Network for Southeast Asia and the Pacific)

	3) RINSNA (Regional Informatics Network for South and Central Asia).
UNESCO Intergovernmental Programmes	UNESCO currently runs two intergovernmental programmes in communication and information, replacing previous programmes until the year 2000.
UNISIST (World Science Information System)	Launched in 1973, marks a new phase in UNESCO's work in library, documentation, and information, with emphasis on scientific and technological information.
UNISIST Study Report (1971)	The working document for UNISIST, outlining the broad principles of the World Science Information System.
Inter-Governmental Conferences for UNISIST	Three major conferences: UNISIST I (1971), NATIS, and UNISIST II (1974, 1979) recognized several programmes and made recommendations for their implementation.

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS AND INSTITUTIONS (IFLA)

Aspect	Details
Founded	1927 in Edinburgh, Scotland.
Goal	To promote international contacts among library associations and librarians.
Type	Non-governmental professional organization.
Headquarters	The Hague, Netherlands (since 1971).
Core Programmes	1. Universal Bibliographic Control and International MARC (UBCIM) 2. Universal Availability of Publications (UAP) 3. Universal Dataflow and Telecommunications (UDT)
Action for Development through Libraries Programme (ALP)	Launched in 1984, renamed in 2004 as "Action for Development through Libraries Programme" (acronym remains ALP).
Committee on Copyright and other Legal Matters (CLM)	Handles copyright issues and advocates for the international library community.
Committee on Free Access to Information and Freedom of Expression (FAIFE)	Defends basic human rights, particularly free access to information and freedom of expression in libraries.
IFLA-CDNL Alliance for Bibliographic Standards (ICABS)	Formed to coordinate bibliographic and resource control activities. Involves collaboration with national libraries and other entities like Biblioteca Nacional de Portugal, IFLA, and CDNL.
Preservation and Conservation (PAC)	Core activity started in 1984.
IFLA UNIMARC	Coordinates the development and promotion of the Universal MARC format, used for international exchange of bibliographic data.
Divisions and Sections	1. General Research Libraries 2. Libraries Serving the General Public 3. Special Libraries 4. Collection and Services 5. Bibliographic Control 6. Management and Technology

	7. Education and Research 8. Regional Activities
IFLANET	IFLA's network initiated in 1993 to improve communication within IFLA and provide virtual presence.
Publications	1. IFLA Journal (Quarterly) 2. IFLA Annual 3. IFLA Trends (Biennial Report) 4. IFLA Medium Term Programme 5. IFLA Statutes and Rules of Procedure 6. Divisional and Sectional Newsletters
Regional Offices	Africa, Asia and Oceania, and Latin America.

OSI MODEL

History and Information: The Open Systems Interconnection (OSI) model is a conceptual framework for networking developed by the International Organization for Standardization (ISO) in 1984. It provides a layered approach to understanding how communication occurs between systems over a network. Year: 1984

S.N.	Layer	Layers	Description	Devices/Examples
1	Physical layer	Physical Layer	Transmits bit stream to physical medium	Network cables, hubs, repeaters
2	Data Link layer	Data Link Layer	Provides data exchange between devices on the same medium	Ethernet switches, MAC addresses
3	Network layer	Network Layer	Takes care of switches and routes information units	Routers, IP addresses
4	Transport layer	Transport Layer	Provides reliable end-to-end data transmission	TCP, UDP protocols, segments
5	Session layer	Session Layer	Maintains dialogue between communication devices	API, Sockets, NetBIOS
6	Presentation layer	Presentation Layer	Formats data (e.g., ASCII)	Encryption, decryption, MIME types
7	Application layer	Application Layer	Provides general services related to applications	HTTP, FTP, SMTP, DNS

CCF UNESCO PGI

Full name:(General Information Program)

- 1978. (ISO standard 2709) published in 1984.
- CCF consists of the major four parts:
- Record label (24 character)
- Directory (five parts tag, length of data field, starting character position, segment identifier, occurrence identifier)
- Data fields (indicator, one or more sub fields, a data field separator, indicators, sub-fields)
- Record separator

DIFFERENT TYPES OF DATABASE MANAGEMENT SYSTEMS (DBMS)

DBMS Type	Description	Examples
Relational Database Management System (RDBMS)	Developed by E.F. Codd, based on the relational data model using tables with rows and columns to represent data and relationships.	Oracle, Access, FoxPro, SQL Server, Informix, Sybase, Visual Basic
Object-Oriented Database Management System (OODBMS)	Based on the object-oriented data model, where data is stored in the form of persistent, sharable objects supporting object-oriented principles.	Jasmine, GemStone, O2, Object Store, Versant ODBMS
Object-Relational Database Management System (ORDBMS)	A hybrid of RDBMS and OODBMS that allows the inclusion of richer object structures and rules, maintaining a consistent data structure in a relational database.	DB2, Dynamic Server, Oracle 8i

ROLES OF INFORMATION PROFESSIONALS

Category	Professionals Involved	Description
Information Generators	Researchers, Inventors, Innovators, Discoverers, Thinkers, Authors, Planners, Policymakers, Judges, etc.	These individuals generate new information through observation, experimentation, hypothesis testing, and conclusions.
Information Gatherers	Journalists, Reporters, Correspondents, Detectives, Police, Spies, Compilers, Enumerators, etc.	These professionals gather information for reporting, investigation, and analysis. They often receive training in information collection methods.
Correspondent	Journalists employed by news agencies or periodicals	A correspondent gathers and reports news, articles, and other forms of information.
Investigative Journalist	Investigative Journalists	These journalists uncover malpractices and corruption within organizations, governments, or elsewhere.
Compilers	Bibliographers, Lexicographers, Encyclopaedists, Reviewers	Compilers gather and organize information from multiple sources into structured formats like bibliographies, dictionaries, and encyclopedias. Reviewers write state-of-the-art critical reviews on narrow subjects.
Referees	Subject experts or peers	Referees are experts in a specific field who evaluate and review scholarly work, often for publication.
Documentalist	Documentalists, Information Officers, Information Scientists	These professionals handle the acquisition, recording, processing, and dissemination of documents. They may also provide services such as current awareness, selective dissemination, photocopies, and translations.
Information Disseminators	Library Professionals, Documentalists, Information Officers, Publishers, Consultants, Teachers,	These professionals disseminate information to users in various forms, ranging from library services to public broadcasting and consultancy.

	Doctors, Lawyers, Broadcast Professionals, etc.	
Information Condensers	Professionals who summarize information	Condensing information to meet the specific needs of users, such as summarizing speeches or reports into concise formats.
Information Retrievers	Reference Librarians, Database Searchers, Internet Searchers	These individuals retrieve information by searching books, databases, and the internet, often on demand.
Information Quantifiers	Professionals working with data growth and decay	These experts measure the rate of growth, decay, and other properties of information, tracking how it evolves over time.
Information Preservers	Archivists, Repographers, Micropublishers, Electronic Publishers, etc.	Information preservers focus on maintaining and safeguarding documents through physical and digital preservation methods such as laminating, photocopying, microfilming, and digitization.

DIFFERENT LIBRARY AND INFORMATION SCIENCE (LIS) PROFESSIONALS

Profession	Description
Library Administrator	Responsible for the overall administration of a library. The head is typically the Chief Librarian , with subordinates such as Deputy Librarian and Assistant Librarian .
Classifier	A classifier categorizes books using a classification scheme (e.g., Dewey Decimal Classification). They determine the subject of a book through its title, contents, text, and index.
Cataloguer	A cataloguer is responsible for creating library catalog records following a catalogue code. They collect information about the book, such as title, author, edition, ISBN, etc.
Classificationist	A classificationist designs and develops classification systems. General classificationists create systems for all subjects, while specialist classificationists focus on specific subjects.
Indexer	An indexer creates indexes to help locate information within documents, using methods like KWIC (Key Word in Context) and KWOC (Key Word out of Context).
Reference Librarian	A reference librarian provides expert information and reference services, assisting users in finding and utilizing information from various sources.
LIS Teacher	A teacher in Library and Information Science (LIS) educates students in various LIS courses, guides research students, and writes textbooks and course materials.
Thesaurus Designer	A professional who designs thesauri, particularly for computer-assisted information retrieval. This profession emerged with the advent of computers in LIS.
Bibliographer	A bibliographer compiles and maintains bibliographies. Special libraries, in particular, provide bibliographical services to their users.

Librametrician	A librametrician specializes in librametrics , the measurement of library activities, collections, staff, and facilities. The term was coined by S. R. Ranganathan in 1949.
Bibliometrician	A bibliometrician specializes in bibliometrics , the study of bibliometric data, often using statistical techniques to analyze documents, their authors, and citations.
Content Developer	A content developer designs and creates content for the internet, including text, images, animations, and interactive features. This role has become important with the rise of digital content.

ISI Web of Knowledge Contents

Category	Details
Overview	ISI Web of Knowledge is an integrated, Internet-based platform that provides a single point of access for a variety of scholarly information. It was launched by the Institute for Scientific Information (ISI) in 2001.
Core Contents	<ul style="list-style-type: none"> - ISI Web of Science: Access to journal literature and citation indexes. - Current Contents Connect: Access to current scholarly literature. - ISI Proceedings: Access to conference proceedings literature. - Derwent Innovation Index: Access to patent literature.
Analytical Contents	<ul style="list-style-type: none"> - Journal Citation Reports on the Web: Evaluates scholarly journals. - Essential Science Indicators: Tracks trends in S&T and social sciences performance. - HighlyCited.com: Information on the world's most highly cited researchers and their achievements.
Hosted Contents	<ul style="list-style-type: none"> - BIOSIS Preview: Biomedical and life sciences literature. - CAB Abstracts: Applied life and agricultural sciences literature. - INSPEC: Applied sciences literature in physics, electronics, control engineering, computing, and IT. - PsycINFO: Literature in behavioral sciences. - FSTA: Food science and technology abstracts.
Information Management Tools	<ul style="list-style-type: none"> - WebFeat Prism: Extends cross-searching to include freely available Internet resources and proprietary library collections. - 1Cate: Open URL-compatible tool for direct access to full-text documents hosted by primary publishers.
Targeted Information Needs	ISI Web of Knowledge caters to all types of information needs, especially current and performance-based scholarly requirements. Current Contents Connect addresses current needs specifically.

Machine Translation (MT) Systems

Field	Details
MT Systems for Mainframe Computers	<ul style="list-style-type: none"> - SYSTRAN (35 language pairs) - METAL (German to English, English to German, German to Spanish, French to Dutch, Dutch to French) - LOGOS (German to English, English to French, German, Italian, Spanish) - Fujitsu (ATLAS: English to Japanese and vice versa)

MT Systems for Personal Computers (1980s)	<ul style="list-style-type: none"> - Wielder MicroCat (First successful system) - PIVOT (NEC) - ASTRANSAC (Toshiba) - HICATS (Hitachi) - PENSEE (Oki) - DUET (Sharp) - PC-Translator, Globalink, LogoVista
SYSTRAN PC Products	<ul style="list-style-type: none"> - SYSTRAN Professional - SYSTRAN Personal - SYSTRAN Office Translator - SYSTRAN WebTranslator
Advantages of SYSTRAN	Large dictionary databases and a large number of languages
MT Systems for Internet	<ul style="list-style-type: none"> - Systran, Logos, Globalink, Fujitsu, JICST, NEC (network-based translation services for on-demand translations) - LANT (Belgium) - multilingual service for email, web pages, and attached files - MTSU (Singapore) - large-scale translation over the Internet

World Translation Index (WTI)

Field	Details
Coverage Period	1987 to Dec. 1997
Subject Focus	Translations from all languages to Western European languages in all fields of science and technology
Collecting Agencies	<ul style="list-style-type: none"> - International Translation Centre (ITC), Delft, The Netherlands - Centre National de la Recherche Scientifique (CNRS), France - National Translation Centre, Chicago
Content	Bibliographical references to both original and translated documents
Translation Types	<ul style="list-style-type: none"> - Published and unpublished translations - Serial and non-serial publications
Translation Source	80% to 85% of the translations are journal articles
Publication Frequency	10 issues per year
Document Delivery Locations	<ul style="list-style-type: none"> - National Research Council of Canada, Document Delivery Section, Canada - BLDSC, Boston Spa, U.K. - Delft Technical University, Delft, The Netherlands
ITC History	<ul style="list-style-type: none"> - Established in 1961 as European Translation Centre (ETC), renamed to ITC in 1975 - Initiated to prevent duplication of translation work and facilitate exchange of information through translations
Previous Publications	<ul style="list-style-type: none"> - World Index of Scientific Translations (1967-1977) - List of Translations notified to ETC (1967-1977) - World Transindex (1977-1986)
Closure	WTI publication stopped in Dec. 1997 due to the closure of ITC

DIFFERENT PATENT INFORMATION SERVICES

Service Name	Description
INPADOC Patent Register Service (PRS)	A legal status database that provides information on whether a patent is still valid or has expired. It helps users identify patents that are no longer protected.
Intellectual Properties and Know-How Informatics (Patents) Division	Provides online and offline patent information services in India.
CASSIS-ASSIST	A search and information tool for searching US patents.
CASSIS-CLASS	A database dealing with the US Patents classification scheme.
EKASWA-A	Covers Indian patent applications published in the Gazette of India (Part III, Section II) from January 1995 onwards.
EKASWA-B	Covers Indian patent applications notified for opposition, as published in the Gazette of India (Part III, Section II) from January 1995 onwards.

DIFFERENT TYPES OF SEARCHES USED IN DATABASES

Search Type	Description
Keyword and Phrase Search	A search can be conducted by entering a single search term or a phrase containing multiple terms.
Boolean Search	Uses Boolean logic with three types: 1. AND : Combines terms, retrieving records that contain all terms. 2. OR : Combines terms, retrieving records that contain any of the terms. 3. NOT : Excludes terms, retrieving records that do not contain specified terms.
Truncation	Allows the search of all forms of a word with the same root. This can be applied to the left, right, or center of a word.
Proximity Search	Specifies how close search terms should be to each other: i) Adjacent terms ii) Terms with one or more words in between iii) Terms within the same paragraph.
Field-Specific Search	Restricts the search to specific fields within a database (e.g., title, author, subject).
Limiting Search	Limits results based on specific criteria such as language, publication year, or source type.
Range Search	Allows selecting records within a certain numerical or date range, often useful for filtering results by publication year.

LIBRARY NETWORK IN INDIA

Network	Full Form	Year Est.
NICNET	National Informatics Centre Network	1977
ERNET	Education and Research Network	1986
INFLIBNET	Information and Library Network	1988
DELNET	Developing Library Network	1988
ADINET	Agriculture Information Dissemination Network	1993
CALIBNET	Calcutta Library Network	1993

MYLIBNET	Mysore Library Network	1994
UGC INFONET	University Grants Commission Information Network	2002
HELINET	Health Library Network	2003

MARC FORMAT

Name	Description
Authority records	Provide information about individual names, subjects, and uniform titles. An authority record establishes an authorized form of each heading.
Bibliographic records	Describe the intellectual and physical characteristics of bibliographic resources (books, sound recordings, video recordings, and so forth).
Classification records	MARC records containing classification data. For example, the Library of Congress Classification has been encoded using the MARC 21 Classification format.
Community Information records	MARC records describing a service-providing agency, such as a local homeless shelter or tax assistance provider.
Holdings records	Provide copy-specific information on a library resource (call number, shelf location, volumes held, and so forth).

STRUCTURE OF AN ISBD RECORD

The ISBD defines nine areas of description. Each area, except area 7, is composed of multiple elements with structured classifications. Elements and areas that do not apply to a particular resource are omitted from the description. Standardized punctuation (colons, semicolons, slashes, dashes, commas, and periods) is used to identify and separate the elements and areas. The order of elements and standardized punctuation make it easier to interpret bibliographic records when one does not understand the language of the description.

0: Content form and media type area

1: Title and statement of responsibility area, consisting of

1.1 Title proper

1.2 Parallel title

1.3 Other title information

1.4 Statement of responsibility

2: Edition area

3: Material or type of resource specific area (e.g., the scale of a map or the numbering of a periodical)

4: Publication, production, distribution, etc., area

5: Material description area (e.g., number of pages in a book or number of CDs issued as a unit) 6: Series area

7: Notes area

8: Resource identifier and terms of availability area (e.g., ISBN, ISSN)

AACR-2R consists of two parts: Part I and Part II. 4.2.1 Part I: Description Part I covers rules for standard description of all kinds of material (print and nonprint). It contains 13 chapters as enumerated below:

- **General Rules for Description**
- **Books, Pamphlets and Printed Sheets**

- **Cartographic Materials**
- **Manuscripts**
- **Music Cataloguing Documents Using AACR-2R 7 2 Cataloguing**
- **Sound Recordings**
- **Motion Pictures and Video Recordings**
- **Graphic Materials**
- **Machine Readable Data Files**
- **Three Dimensional Artifacts and Realia**
- **Microforms**
- **Serials**
- **Analysis**

AACR- 2R

Part I: Standard Description

- Chapter 1: General rules for all materials (print & non-print)
- Chapters 2-12: Specific rules for different types of materials (books, music, maps, etc.)
- Chapter 13: Analytical entries (relationships between bibliographic items)

Part II: Headings, Uniform Titles and References

- Chapters 21-26: Establishing access points in catalogs (applicable to all materials)
- Chapter 21: Choice of main and added entries
- Chapters 22-24: Rules for forming headings for persons, geographic names, and corporate bodies
- Chapter 25: Uniform titles
- Chapter 26: References

Additional Resources

Appendices: Capitalization, abbreviations, numerals, glossary ,Index

Note: There are no chapters between 13 and 21.

AACR-2R has prescribed three levels of description

PERSON AND THEIR AREA OF CONTRIBUTION

Name	Area Personality or Contribution
Abraham Maslow	Hierarchy of Needs
Allen Kent	Mechanized Information Retrieval
Alvin Toffler	Power Shift, Information Overload
Beesman	Information Transfer
Belkin, 1989	Anomalous State of Knowledge (ASK)
Benjamin Dancer	Microphotography
Bibliometry (1969)	Alan Pritchard
Black and Moutan	Management Grid
Bradford's Law (1934)	Samuel C Bradford
Blair and Maron	Evaluation study on retrieval effectiveness of full text search (STAIRS)
C.A. Cutter	Expansive Classification, Dictionary Catalogue
C.W.Hanson	Divides Documentary Sources of Inf. Into Primary & Secondary
Charles Babbage	Analytical Engine

Chris Rusbridge	Hybrid Library (1998)
Charless F Gosnell	Half-Life of information
Calvin Mooers	Information Retrieval System
Conard Gesner	Father of Bibliography (1545)
Craven TC	LIPHIS (Linked Phrase Indexing System)
Derek J. de Solla Price	Little Science Big Science (1963), Invisible College (1972)
D.J. Fosket	Subject Approach to Information
Denis Grogan	Divides Documentary Sources of Inf. Into Primary, Secondary & Tertiary
E. Garfield	Citation Indexing
Eisenberg and Berkowitz	The Big 6 model of Information problem solving
E.J. Coates	Retroactive ordinal notation
Elton Mayo	Father of Human Relation School
F. Hertzberg	Father of Corporate Strategy
F.W. Taylor	Father of Scientific Theory of Management
Fermont Rider	International Classification
George Gerbner (1956)	General Model (Means and control dimensions relationship between communicating agent and communication products)
H.E. Bliss	Bibliographic Classification, Organization of Knowledge in libraries and subject approach
H.P. Luhn (IBM)	KWIC, Uniterm Indexing, SDI (1950)
Henry Foyal	Classical Theory, Father of Administration, and 14 principles
J. Kaiser	Concrete Process
J.D. Brown	Subject Classification, One place Theory
J.D. Fosket	Subject approach of information
J.E.L. Farradone	Systematic Indexing System
J.R. Sharp	Key Word Indexing
James Duff Brown	Open Access System in British Library
James I. Wyer	Conservative, Moderate & Liberal Theories of Ref. Service
Jean Aitkinson	The Sauro-Facet
John Cotton Dana	Newark Changing System
Kauro Ishikawa	The seven basic tools for quality control
Koontz	Classification of Management Theory (Human behavioral theory)
Lancaster FW	Theory of scales for the measurement of operational variables
Lasswell (1948)	Communication model (Who says, What, which channel, Whom, and with What Effect)
Lotka Law (1926)	Frequency of Publication by Authors in a given field. Scientific productivity
Luther Gulick	POSDCORB
M. Taube	SLIC Indexing
M.M.Kessler	Bibliographic Coupling
Madden, Moon, Moore, McPheron	Librarianship is not a profession
Marcel Dekker	Encyclopedia of Library and Information Science
Mc Colvin	Demand & Supply Theory of Books
Michael Polayani	Two categories of as 'explicit' and 'tacit' knowledge

Michael Stern Hart	Invented the e-book in 1971
Michael Casey	Term “Library 2.0” was first used
Minie Sears	Sears List of Subject Heading
Osgood and Schramm	Circular Model
A. Norbert Wiener	Cybernetics was pioneered
Otto Nacke	Coined informatics in 1979
Ouchi	Theory Z
Pascal	Calculating Machine
Paul Outlet & Henry Lafontaine	Universal Classification, UDC, The Library World
Paulin Autherton	Putting knowledge to work
Peter Drucker	MBO (Management by Objective)
Peter Phyrr	Zero Base Budgeting
S.C. Bradford	Documentation
Rubert Fugmann	Theory of Information Supply and Indexing based on five axioms
S.R. Ranganathan	Elements of Library Classification, prologma, Tree Card System, CC and CCC
Samuel S Green	Reference Service
Samuel Rothstein	Minimal, Middling & Maximum theories of Reference Service
Saracevic, 1995	TREC experiments (Text Retrieval Evaluation Conference)
Shanan Weaver	Mathematical communication model, Berlo 1988 S-M-C-R Model
Schramm	Models Concept or Theory (Human communication model)
Ted Nelson	Hypertext
Tim Berners-Lee	World Wide Web (WWW)
Tim O'Reilly & Dale Dougherty	Web 2.0 (2014) Darcy DiNucci in 1999
Von Bertalanffy	General Systems Theory (GST)
Vroom (1964)	Formula of Motivation $P = f(M, A, \text{and } E)$ P = Performance, M = Motivation, A = Ability, E = Environment
W.A. Borden	Started the Reference Service in India
William Gibson	Cyberspace
W.B.C. Sayers	Teacher of S.R. Ranganathan at London
Wyndham Hulme	'Literary warrant' for book classification was introduced

LIST OF CONSORTIA

Name	Est. Year	Anchoring Institution	Funding Agency
NKRC	2002	CSIR-NISCAIR	CSIR & DST
UGC-INFONET	2003	INFLIBNET	UGC
INDEST-AICTE	2003	IIT Delhi	MHRD/AICTE
DAE Consortium	2003	NA	DAE
MCIT	2005	NIC	MCIT
CeRA	2008	IARI	ICAR
ERMED	2008	NML	MH&FW

DeLCON	2009	NBRC	BDT
DRDO	2009	DESIDOC	DRDO, MoD
NLIST	2010	INFLIBNET	MHRD
e-Shodh Sindhu	2015	INFLIBNET	MHRD
DERCON	2015	Min. Earth Sci.	Min. Earth Sci.

FULL-TEXT AGGREGATORS

Name	Discipline(s)	Access cost	Provider(s)
Internet Archive Scholar	Multidisciplinary	Free	Internet Archive
CORE	Multidisciplinary	Free	Open University
CiteSeerX	Multidisciplinary	Free	Pennsylvania State University
Paperity	Multidisciplinary	Free	Paperity Sp. z o.o.
Semantic Scholar	Multidisciplinary	Free	Allen Institute for Artificial Intelligence
Europe PMC	Biomedical	Free	European Bioinformatics Institute (EMBL-EBI)
PubMed Central (PMC)	Biomedical	Free	National Institutes of Health (NIH), U.S. National Library of Medicine (NLM)
ResearchGate	Multidisciplinary	Free	ResearchGate GmbH
SSRN: Social Science Research Network	Social science	Free & Subscription	Elsevier
HAL	Multidisciplinary	Free	CNRS's Centre pour la Communication Scientifique Directe (CCSD)
RePEc: Research Papers in Economics	Economics	Free	IDEAS: Federal Reserve Bank of St. Louis, EconPapers: Örebro University School of Business
PhilPapers	Philosophy	Free	PhilPapers
ERIC: Educational Resource Information Center	Education	Free & Subscription	United States Department of Education (available by subscription from OCLC, CSA)
Synthical	Multidisciplinary	Free	Synthical

METADATA SERVICES

Name	Discipline(s)	Access cost	Provider(s)
AGRIS: Agricultural database	Agriculture	Free	FAO
Arachne	Archaeology, Art history	Free	DAI & University of Cologne
AMiner	Computer Science	Free	Tsinghua University

Arts & Humanities Citation Index	Arts, Humanities	Subscription	Clarivate Analytics
Astrophysics Data System	Astrophysics, Geophysics, Physics	Free	Harvard University
ATLA Religion Database	Religious studies	Subscription	EBSCO Publishing
BASE: Bielefeld Academic Search Engine	Multidisciplinary	Free	Bielefeld University
Book Review Index Online	Book reviews	Subscription	Thomson Gale
Books in Print	Books	Subscription	R. R. Bowker
CAB Abstracts	Applied life sciences	Subscription	CABI

More Info:

CINAHL: Cumulative Index to Nursing and Allied Health	Nursing, Allied Health	Subscription	EBSCO
CORE	Multidisciplinary	Free	Open University
Crossref	Multidisciplinary	Free	Crossref
DeepDyve	Multidisciplinary	Free & Subscription	DeepDyve
Dimensions	Multidisciplinary	Free & Subscription	Digital Science & Research Solutions Ltd
Directory of Open Access Journals (DOAJ)	Multidisciplinary	Free	Infrastructure Services for Open Access (IS4OA)
EconBiz	Economics	Free	ZBW- German National Library of Economics– Leibniz Information Centre for Economics (ZBW)
EconLit	Economics	Subscription	American Economic Association (available from EBSCOhost, ProQuest, OVID, and AEA)
EMBASE	Biomedicine, Pharmacology	Subscription	Elsevier
FSTA – Food Science and Technology Abstracts	Food science, Food technology, Nutrition	Subscription	IFIS Publishing (available via EBSCOhost, IHS Inc., Ovid, Proquest Dialog, STN and Web of Science)
GeoRef	Geosciences	Subscription	American Geosciences Institute

Google Scholar	Multidisciplinary	Free	Google
Informit	Multidisciplinary	Subscription	RMIT Training Pty Ltd (RMIT Training)
Inspec	Physics, Engineering, Computer Science	Subscription	IET
International Nuclear Information System (INIS)	Nuclear Physics, Nuclear Energy, Medical Physics	Free	International Atomic Energy Agency
International Philosophical Bibliography	Philosophy	Subscription	Université Catholique de Louvain (available from Peeters Publishers)
J-Gate	Multidisciplinary	Free & Subscription	Informatics India Ltd
The Lens	Multidisciplinary	Free & Subscription	Cambia
MathSciNet	Mathematics	Subscription	American Mathematical Society
MEDLINE	Medicine, Healthcare	Free	NLM
MyScienceWork	Multidisciplinary	Free	MyScienceWork Inc
National Diet Library Collection	Multidisciplinary	Free	National Diet Library
OAIster	Multidisciplinary	Free	OCLC
OpenAIRE Graph	Multidisciplinary	Free	OpenAIRE AMKE (not-for-profit)
OpenAlex	Multidisciplinary	Free	OurResearch
PsycINFO	Psychology	Subscription	APA
PubMed	Biomedical, life sciences	Free	NIH, NLM
RSWBplus	Civil Engineering, Architecture	Subscription	Fraunhofer IRB
Russian Science Citation Index	Multidisciplinary	Free	Scientific Electronic Library
ScienceOpen	Multidisciplinary	Free	ScienceOpen Inc.
Scopus	Multidisciplinary	Subscription	Elsevier
Web of Science	Multidisciplinary	Subscription	Clarivate Analytics
Zasshi Kiji Sakuin: Japanese Periodicals Index	Multidisciplinary	Free & Subscription	National Diet Library
Zentralblatt MATH	Mathematics	Free	FIZ Karlsruhe
The Zoological Record	Zoology	Subscription	Clarivate Analytics

SMALLER METADATA SERVICE

Name	Discipline(s)	Access cost	Provider(s)
Academic Search	Multidisciplinary	Subscription	EBSCO Publishing
Aerospace & High Technology Database	Aerospace, Aeronautics, Astronautics	Subscription	ProQuest
African Journals OnLine (AJOL)	Multidisciplinary	Free & Subscription	AJOL
AgeLine	Sociology, Gerontology	Subscription	EBSCO Publishing
AGRICOLA: Agricultural Online Access	Agriculture	Free & Subscription	NAL (free access NAL, subscription access ProQuest, OVID)
Analytical Abstracts	Chemistry	Subscription	RSC
Anthropological Index Online	Anthropology	Free & Subscription	RAI
Anthropological Literature	Anthropology, Archaeology	Free & Subscription	Harvard University (nonHarvard access provided by OCLC)
Archive Grid	Multidisciplinary	Free	World Cat
ASCE Library	Civil Engineering	Free & Subscription	ASCE

More information

AULIMP: Air University Library's Index to Military Periodicals	Military Science	Free	Air University
Biological Abstracts	Biology	Subscription	Thomson Reuters
Chemical Abstracts Service	Chemistry	Subscription	ACS
Chinese Social Sciences Citation Index	Social sciences	Subscription	Nanjing University
Civil engineering database	Civil engineering	Free	American Society of Civil Engineers
Current Contents	Multidisciplinary	Subscription	Clarivate Analytics
Index Copernicus	Multidisciplinary	Free	Index Copernicus Ltd

Information Bridge: Department of Energy Scientific and Technical Information	Multidisciplinary	Free	DOE (OSTI)
Indian Citation Index	Multidisciplinary	Subscription	ICI
IARP	Multidisciplinary	Free	Volunteer Collaboration
INSPIRE-HEP	Physics, (High Energy)	Free	CERN, DESY, Fermilab, SLAC and IHEP
LexisNexis	Law	Subscription	Reed Elsevier
ORCID	Multidisciplinary	Free	ORCID Inc.
Philosophy Documentation Center e Collection	Applied ethics, Philosophy, Religious studies	Free & Subscription	Philosophy Documentation Center
POIESIS: Philosophy Online Serials	Philosophy, applied ethics, religious studies	Free & Subscription	Philosophy Documentation Center
Publons	Multidisciplinary	Free	Clarivate Analytics
PubPsych	Psychology	Free	Leibniz Institute for Psychology Information
Readers' Guide to Periodical Literature	Literature	Subscription	H. W. Wilson Company
Rock's Backpages	Music	Free & Subscription	Backpages Ltd
SafetyLit	Multidisciplinary	Free	SafetyLit Foundation
Science.gov	Multidisciplinary	Free	United States Government
Science Citation Index	Multidisciplinary	Subscription	Clarivate Analytics
SCIndeks - Serbian Citation Index	Multidisciplinary	Free	CEON/CEES - Centre for Evaluation in Education and Science
SNAC (Social Networks and Archival Contexts)	Multidisciplinary	Free	
Social Sciences Citation Index	Social science	Subscription	Clarivate Analytics
Socolar	Multidisciplinary	Free & Subscription	China Educational Publications Import and Export Corporation

Ulrich's Periodicals Directory	Multidisciplinary	Subscription	ProQuest
WestLaw	Law	Subscription	Thomson Reuters
WorldCat	Multidisciplinary	Free & Subscription	OCLC Inc.
WorldWideScience	Multidisciplinary	Free & Subscription	DOE (OSTI)

LIST OF PUBLISHERS

Name	Discipline(s)	Access cost	Provider(s)
Association for Computing Machinery Digital Library	Computer Science, Engineering	Subscription	Association for Computing Machinery
Analytical Sciences Digital Library	Analytical chemistry	Free	NSDL and ACS
Bibliographie de civilisation médiévale	Medieval studies	Subscription	University of Poitiers (available from Brepols Publishers)
BioOne	Biology, Ecology, Environmental Science	Free & Subscription	BioOne
IEEE Xplore	Computer Science, Engineering, Electronics	Subscription	IEEE
IngentaConnect	Multidisciplinary	Free & Subscription	Ingenta
JSTOR: Journal Storage	Multidisciplinary	Free & Subscription	JSTOR
OpenEdition.org	Humanities, social science	Free	Cléo (UMS 3287) CNRS EHESS University of Avignon
Project MUSE	Humanities, social science	Subscription	Project MUSE, Johns Hopkins University Press
SciELO	Multidisciplinary	Free	FAPESP, CNPq and BIREME
ScienceDirect	Science including Medicine	Subscription	Elsevier

List of Biographical resources

Site	Language	Description	Access
Afro-American Encyclopaedia	English	Classic historical encyclopedia (1895)	Free
Australian Dictionary of Biography	English	Entries on notable Australians who have died	Free

Croatian Biographical Lexicon	Croatian	Multi-volume biographical reference work on notable figures from Croatian history	Free
Deutsche Biographie	German	Biographies on notable German speaking people	Free
American National Biography	English	Biographies of notable Americans	Subscription
Dictionary of Irish Architects	English	Biographical information on Irish architects from 1720 to 1940	Free
Kdo byl kdo	Czech	Biographies on notable Czech and Slovak people	Free
Österreichisches Biographisches Lexikon 1815–1950	German	Biographies on notable Austrians	Free
Oxford Dictionary of National Biography	English	Comprehensive 66-volume reference work on notable figures from British history	Subscription
Dictionary of New Zealand Biography	English, Māori	Entries on notable New Zealanders who have died	Free
Dizionario Biografico degli Italiani	Italian	Biographical Dictionary of Italian People, published by the Istituto dell'Enciclopedia Italiana Treccani	Free

FINANCIAL ESTIMATION METHODS

Method	Description	Recommended Amounts
Per Capita Method	<ul style="list-style-type: none"> -Minimum amount per member estimated based on standard library service. -Suggested to revise amounts to at least three times due to rising costs. 	<ul style="list-style-type: none"> - University: Rs. 25/student, Rs. 300/teacher - School: Rs. 50/student, Rs. 150/teacher
Proportional Method	<ul style="list-style-type: none"> -Norm laid down based on total educational budget. -Allocated based on the development stage of each university library. 	<ul style="list-style-type: none"> - University: 6.5% to 10% of educational budget - School: 6% of expenditure on school education
Method of Details	<ul style="list-style-type: none"> -All items of expenditure accounted for using standards for each item. -5% of book costs for stacking, storing, and servicing. -Norms fixed for initial grants to build the basic collection for newly started university libraries. 	<ul style="list-style-type: none"> - Books: Rs. 15/student, Rs. 200/teacher

Weeding Out Library Materials

Aspect	Details
Who Should Weed Out?	<ul style="list-style-type: none"> - The librarian should be directly involved, with decisions possibly supported by Library Committee members, library authority nominees, or a specially appointed committee. - Subject experts or senior faculty members can also provide trusted advice.
Guidelines for Weeding Out	<ul style="list-style-type: none"> - Consider if the item can be replaced with a new copy, edition, or book on the subject. - Anticipate future needs for the document if removed.
Theories on Weeding	<ul style="list-style-type: none"> - Fussler and Simon: Past use is the best indicator of future use. - Trueswell: Developed a method to weed out items while maintaining a satisfaction rate based on past use. - Raffel and Shishko: Suggest using the publication date as a key criterion.
Guidelines by Organizations	<ul style="list-style-type: none"> - American Library Association (ALA): Recommends annual withdrawals averaging at least 5% of the total collection. - Sinha Committee Report (1958): For Indian public libraries, suggests discarding 5% of fiction and 2% of non-fiction each year.
Ranganathan's Observations	<ul style="list-style-type: none"> - Books that become outdated in ideas within 20 years should be weeded out and written off.
Handling Weeded Materials	<ul style="list-style-type: none"> - Damaged or irreparable items: Can be sold similarly to old newspapers. - Good-condition items: Consider donating to libraries unable to afford such materials. - Book Reservoirs: Store useful weeded items regionally as reserves, preserving copies for research and future needs.
Record Keeping	<ul style="list-style-type: none"> - Ensure weeding is sanctioned by the Library Committee or authority. - Update the Accession Register to mark the item as "written off" with relevant orders. - Delete entries from shelf lists, catalogues, and other records to reflect the removal.

CATEGORIES OF STAFF IN ACADEMIC LIBRARIES

Category	Roles	Responsibilities
Professional Staff	Positions: Professional Assistant, Assistant Librarian, Deputy Librarian, Librarian	<ul style="list-style-type: none"> - Book selection - Book order - Classification - Cataloguing - Indexing - Abstracting - Reference service - Information service - Planning
Supporting (Technical) or Paraprofessional Staff	Positions similar to para-medical staff like nurses, technicians Education: Certificate or diploma (undergraduate) in Library Science	<ul style="list-style-type: none"> - Preparation of book selection slips - Accessioning of books - Registration of periodicals - Typing catalogue cards, bibliographies

		<ul style="list-style-type: none"> - Volume numbering - Charging/discharging books - Issue records maintenance - Inter-library loan work - Shelving documents - Preparation for binding - Stock-taking
Supporting (Administrative) Staff	General office support in a library	<ul style="list-style-type: none"> - Secretarial assistance to librarians and senior staff - Personnel records maintenance - Accounts management (salaries, purchases, bills) - Stores maintenance (purchase, stock registers) - Typing (except catalogue cards, bibliographies) - Housekeeping and sanitary duties

UGC LIBRARY COMMITTEE STAFFING RECOMMENDATIONS

Section	Initial Staff Requirement	Later Changes Suggested by Dr. S.R. Ranganathan
Book Section	One person for every 6,000 volumes added annually	No change
Periodical Publications Section	One person for every 500 current periodicals	Revised to one person for every 1,500 periodicals subscribed
Documentation Section	One person for every 1,000 entries prepared annually	Revised to 30 research workers for each university (to work alongside NISCAIR and abstracting services)
Technical Section	One person for every 2,000 volumes added annually	No change
Maintenance Section	<ul style="list-style-type: none"> - One person for every 6,000 volumes added annually - One person for every 500 volumes to be replaced daily - One person for every 100,000 volumes in the library 	Revised to one person for every 1,500 volumes newly added and 50,000 volumes maintained
Administrative Section	Minimum of one library accountant, one steno-typist, and one correspondence clerk	No change
Reference Section	One person for every 50 readers daily (excluding textbook users)	No change
Circulation Section	One person for every 1,500 hours the library gate remains open annually	No change

Supervisory Section	One Librarian and one Assistant or Deputy Librarian	No change
Unskilled Staff	<ul style="list-style-type: none"> - One cleaner per 30,000 volumes in the library - One attendant for every 6,000 volumes added annually - One attendant per 500 current periodicals - Additional attendants for shifts in the Circulation Section and other routine tasks 	No change

The staffing norms recommended by the **AICTE for technical institutions** and the suggested staffing patterns for **different levels of schools** in India:

NORMS OF AICTE FOR TECHNICAL INSTITUTIONS

Library Staff Position	Required Staff	Initial Stock
Librarian	1	4,000 volumes of books, 36 journals (18 national, 18 international)
Assistant Librarian	1	
Assistants	4	

(Source: *Handbook of Norms and Standards of AICTE, 1999*)

NORMS OF STAFFING FOR DIFFERENT LEVELS OF SCHOOLS

Type of School	Library Staff Position	Required Staff
Senior Secondary School	Librarian	1
	Assistant Librarian	1
	Class D Staff	1
Secondary School	Librarian	1
	Assistant Librarian	1
	Class D Staff	1
Middle School	Librarian	1
	Class D Staff	1
Primary School	Teacher in charge	1 (part-time)

FOURTH PHASE OF THE PUBLIC LIBRARY SYSTEM IN INDIA

Phase	Period	Description
Introduction	1762-1947	Public libraries in India emerged under British influence. The library development stages in Britain and India were similar, although India took longer to progress. The first public library law in Britain passed in 1850, while India's came in 1948. The modern public library concept developed in India in 1950 with the Delhi Public Library.

The First Phase	1808-1900	In 1808, the Bombay Presidency initiated the registration of libraries to receive published books. Public libraries were established in the three Presidency towns (Bombay, Calcutta, Madras) with European support. Subscription libraries emerged but were accessible only to paying members, thus not fully public.
The Second Phase	1900-1937	The public library movement gained momentum among the educated class. In 1902, Lord Curzon renamed the Calcutta Library as the Imperial Library, which later became the National Library in 1948. The Baroda Movement (1906-1911) set up a model library system under Maharaja Sayaji Rao III. The first Library School was established in Baroda in 1906.
Library Education	1906 onwards	The first Library School was established in Baroda in 1906 by Mr. Bowden. The Panjab University in Lahore started a second library school in 1915. The Andhra State Library Association formed in 1914, followed by Bengal in 1927. The Indian Library Association was established in 1933 in Calcutta.
The Third Phase	1937-1947	With the Indian National Congress in power, public library demand grew. State governments established around 13,000 village libraries (1937-1942) as part of the Indian Adult Education movement. In 1939-40, the Library Development Committee in Bombay proposed a six-stage public library development plan.
The Fourth Phase	1947 – Present	The fourth phase began after India's independence on August 15, 1947. Key milestones included the passing of the Madras Public Libraries Act (1948) and the establishment of the Delhi Public Library (DPL) in 1951, a UNESCO initiative. DPL became the first modern public library in India, meeting UNESCO's manifesto for public libraries.
Delhi Public Library (DPL)	1949-1951	UNESCO initiated a public library project in India, marking the establishment of DPL as a model for modern libraries. The library offered free services, was open to all, and included various cultural and community activities. It became known as Asia's busiest public library with around 100,000 enrollees. It was declared UNESCO's most successful project in 1956.

AUTHORS AND BOOKS

Author(s)	Title	Pub. Year	Publisher/Editor
Johnson, Blmer D.	<i>A History of Libraries in the Western World</i>	1965	Scarecrow
Irwin, Irwin	<i>Ancient and Medieval Libraries</i>	1968	Encyclopedia of Library and Information Science (A. Kent & H. Lancour, Eds)
Mumford, William A. and Penny Rate	<i>Aspects of British Public Library History, (1850-1950)</i>	1951	Library Association

Shera, Jesse H.	<i>Foundations of the Public Library: The Origins of the Public Library Movement in New England (1629-1855)</i>	1965	Shoestring Press
Nelson Associates	<i>Public Libraries in the United States: Trends, Problems, and Recommendations: A Report Prepared for the National Advisory Commission on Libraries</i>	1967	Nelson Associates
Public Library Association	<i>Standards Committee, Minimum Standards for Public Library Systems</i>	1966	ALA (American Library Association)
Sherill, L.L.	<i>Library Service for the Unnerved</i>	1969	Bowker
Harrison, K.C.	<i>Libraries in Scandinavia (2nd ed.)</i>	1969	André Deutsch
Kalia, D.R.	<i>Guidelines for Public Library Services and Systems</i>	1990	RRR Library Foundation
Kalia, D.R.	<i>Public Libraries, In 50 Years: Library and Information Services in India</i>	1998	Shipra

THE ROLE OF INTERNATIONAL ORGANIZATIONS LIKE UNESCO AND IFLA IN THE DEVELOPMENT OF PUBLIC LIBRARIES

Aspect	Details
International Organizations	UNESCO and IFLA (International Federation of Library Associations and Institutions) have played significant roles in the development of public libraries. They have provided guidance, standards, and support for the global promotion of library services.
UNESCO's Contribution	<ul style="list-style-type: none"> - Delhi Public Library: Established by UNESCO in 1951 as a model public library system to introduce the concept of free public libraries. It has since grown into a premier public library system in Delhi. - UNESCO Library, Documentation and Information Services in New Delhi provides information support to regional and country programs, aiding in the sharing and exchange of information materials. - Provides online bibliographic searches through the UNESCO New Delhi Library Database.
IFLA's Contribution	<ul style="list-style-type: none"> - International Standards and Guidelines: IFLA has created various documents for the promotion and development of public libraries, including: <ol style="list-style-type: none"> 1) UNESCO Public Library Manifesto (1972) (revised in 1994). 2) IFLA Standards for Public Libraries (1973/1977). 3) Public Library Service: IFLA/UNESCO Guidelines for Development (2000). 4) Standards and guidelines for specific library services, such as for the blind, hospital patients, handicapped readers, ethnic and linguistic minorities, mobile libraries, etc. 5) Measuring Performance of Public Libraries: A Draft Manual (1989) by Nick More, developed by UNESCO.

MODEL PUBLIC LIBRARY BILLS/ACTS IN INDIA

Year	Model Public Library Act/Bill	Key Contributors	Revisions and Salient Features
1930	Model Public Libraries Act	Dr. S.R. Ranganathan	Revised in 1957 and 1972. Includes constitution of State Library Authority, State Library Committee, District Library Authority, library cess collection, and local body autonomy.
1963	Model Public Library Bill	Dr. M.D. Sen Committee, Ministry of Education	Establishment of State Library Council, State Library Directorate, and provision of funds from the state exchequer. Missing State Library Authority provision.
1964	Model Public Library Bill	Working Group of the Planning Commission, Govt. of India	Focused on public library systems.
1989	Model Public Libraries Act (Indian Library Association)	Indian Library Association	Revised in 1995 as Model Public Library and Information Services Act. Aimed at strengthening public library services and facilities.
2000	Model Union Public Library Act	Unknown	Revised to suit the requirements of the new millennium.

PUBLIC LIBRARY ACTS

State	Year	Library Cess/Financial Source
Tamil Nadu	1948	Library cess (10% on property tax)
Andhra Pradesh	1960	Library cess (8% on property tax)
Karnataka	1965	Library cess (6% on lands, buildings, vehicles, and profession)
Maharashtra	1967	No library cess, state government grant
West Bengal	1979	No library cess, state government grant
Manipur	1988	No library cess, state government grant
Kerala	1989	Library cess (5% on property tax and not less than 1% of state expenditure on education budget)
Haryana	1989	Local bodies to levy cess
Goa	1993	Surcharge on IMFL @ 0.50 paise per litre, 0.50 paise on bulk beer per litre, and 1% on state education budget
Mizoram	1993	No library cess, state government grant
Gujarat	2001	No library cess, state government grant
Orissa	2001	No library cess, state government grant

RANGANATHAN'S CONTRIBUTIONS TO PUBLIC LIBRARY DEVELOPMENT IN INDIA

Contribution	Details and Year
Model Library Bill	Presented at the First All Asia Education Conference in Varanasi, adopted as the seed for library legislation in India. (1930)
Library Bills for Indian States	Drafted library bills for various states including Bengal, Bombay, Madras State, and others, leading to the enactment of laws in several states. (1931, 1946, 1947, 1950, 1957, 1958, 1960, 1965)
Library Laws Enacted During His Lifetime	Library laws were enacted in Tamil Nadu, Andhra Pradesh, and Mysore, based on his drafts. (1948 - Tamil Nadu, 1960 - Andhra Pradesh, 1965 - Mysore)
All India Seminar on Public Libraries	Made a fervent appeal for a Union Public Library Act, State Library Acts, National Central Libraries, and a National Grid of Public Library systems. (Last year of his life, 1972)
Library Development Plans	Developed plans such as the "Post-War Reconstruction of Libraries in India" and "National Library System," both shaping library development in India. (1944 - Post-War plan, 1946 - National Library System)
Advisory Committee for Libraries	His influence on the committee led to the 1959 report advocating for a 25-year library development plan and library laws in India. (1957 - Committee formed, 1959 - Report)
Government of India Response	The establishment of the Raja Rammohun Roy Library Foundation, promoting public libraries and supporting financial assistance for libraries. (1972)
Library Associations	Founded the Madras Library Association (MALA), served as its secretary, and was involved in the Indian Library Association (ILA), drafting its first constitution. (1928 - MALA founded, 1933 - ILA foundation, 1944-1953 - ILA president)
Library Popularization Efforts	Demonstrated the bullock cart library at Mannargudi and gave a powerful presidential address at the All-India Library Conference in Nagpur, advocating for library services. (1931 - Bullock cart library demonstration, 1949 - ILA Conference)

TYPE 1 PUBLIC LIBRARIES AND THEIR FINANCIAL ARRANGEMENTS

Type 1: Pure Form of Public Libraries	Financial Arrangement
General Overview	Established and run by the government, free of charge. Libraries are financed through an independent source of income raised locally, such as cess, not linked to the state budget.
Financial Source	The local library authorities (LLAs) receive library cess as a surcharge on taxes, supplemented by state government grants.
States Using this System	Tamil Nadu, Andhra Pradesh, Karnataka, Kerala, Goa
Tamil Nadu	LLAs receive library cess collected as a surcharge on property or house tax (10 paise per rupee). The fund includes cess collected, state grants, special grants, contributions, gifts, income from endowments, and fines.

Andhra Pradesh	Library cess is a surcharge on property or house tax (8 paise per rupee). The fund also includes state grants, special grants, contributions, gifts, and income from endowments.
Karnataka	The District Library Fund/City Library Fund consists of cess (6 paise per rupee), grants from state and central governments, contributions, gifts, and funds collected by the LLAs. A State Library Fund is also included.
Kerala	The State Library Fund includes state government grants, library cess (5 paise per rupee), central government grants, and contributions or gifts.
Goa	Library cess comes from a surcharge on liquor (50 paise per proof litre) and bulk beer. The state earmarks 1% of the education budget for library development.
Other Features	Collection of library cess and remission to LLAs is managed by local bodies like panchayats or municipalities, while LLAs run the library services.

TYPE 2 PUBLIC LIBRARIES

Type 2: Mixed Form of Public Libraries	Details
Historical Context	The mixed form of public libraries was historically predominant in certain states. These libraries consisted of government-supported subscription libraries managed by voluntary organizations/NGOs.
State-Specific Library Names	<ul style="list-style-type: none"> - Sponsored Libraries in West Bengal - Recognised Libraries in Maharashtra - Grant-in-Libraries in Gujarat - Affiliated Libraries in Kerala - Recognised Village Libraries in Mizoram
State Government Support	State governments supported these libraries instead of establishing new ones. They were sometimes declared as District Libraries/Taluka Libraries.
Library Acts	The library acts did not allow levying of cess for financing these libraries. Grants to libraries were provided based on criteria like area population, collection size, membership, and working hours.
Libraries' Income	These libraries were allowed to charge a nominal subscription as a supplementary source of income.
States with Strong Voluntary Service	Maharashtra, West Bengal, Gujarat, Kerala, Manipur, Mizoram, etc.
Maharashtra Public Libraries Act, 1967	The Library Fund includes annual contributions by the state government, special grants, central government grants, and public contributions. The fund is used for grants-in-aid to Aided Libraries.
West Bengal Public Libraries Act, 1979	The Library Fund includes state government grants, contributions, gifts, income from endowments, and income from the Local Library Authority. Sponsored Libraries receive assistance primarily for employee salaries.
Manipur Public Libraries Act, 1988	The Library Fund is created from state contributions, special state grants, and other sources. Public Libraries in Manipur are largely subscription (NGO) libraries.
Mizoram Public Libraries Act, 1993	The state budget covers the establishment and maintenance of the library system. Government library salaries are paid from the state's consolidated fund.

	Recognised Village Libraries, operated by voluntary organizations, receive government grants.
Kerala Public Libraries Act, 1989	Except for a few government libraries, most libraries in Kerala are voluntary organization libraries. The Kerala Granthasala Sangham managed grants until the 1989 Library Act, after which the government directly supported Affiliated Libraries.

ISI STANDARDS AND OTHER GUIDELINES RELATED TO LIBRARY BUILDINGS

Standard/Guideline	Details
IS:2672-1996	Code of practice for library lighting.
IS:1829 (Part I) - 1978	Specification for library furniture and fittings, Part I: Timber (first revision).
IS:1829 (Part II) - 1977	Specifications for library furniture and fittings, Part II: Steel.
IS:1243-1958	Recommendations for modular coordination of dimensions in the building industry.
IS:1172-1957	Code of basic requirements for water supply, drainage, and sanitation in library buildings.
IS:1883-1957	Metal shelving racks (adjustable type, second revision).
IS:8338-1976	Recommendations related to primary elements in the design of school library buildings.
IS:3312	Steel shelving cabinets (adjustable type, first revision).
IS:4116-1976	Wooden shelving cabinets (adjustable type, first revision).
ISI (1977)	Recommendations relating to primary elements in the design of library buildings.
ISI:1553	Code of practice relating to primary elements in the design of library buildings (1976).
IFLA Standard for Public Libraries (Edn. 2, 1977)	Standards for library buildings (pp. 38-53).
IFLA Guidelines for Public Libraries (1986)	Guidelines for public libraries, focusing on service points (Chapter IV, pp. 43-47).
Ashburner, E.H. (1986)	<i>Modern Public Libraries: Their Planning and Design</i> - A comprehensive guide on the planning and design of modern public libraries.

LIBRARY EQUIPMENT'S

This is not mandatory to learn but get a view of this

Item	Specifications
1) Atlas Stands	<ul style="list-style-type: none"> - Height of back from ground: 3'9" - Height of front from ground: 3'6" (slope of 20 degrees) - Dimensions: 28" broad, 22" deep - Five compartments, 6" apart - 4" ground clearance

	<ul style="list-style-type: none"> - Wooden bar (1/2" thick) along fore-edge to prevent atlases from sliding - Thickness of planks: 1" to 1 1/2"
2) Book Trolleys (Steel)	<ul style="list-style-type: none"> - Dimensions: Height: 3', Breadth: 2'8", Width: 16" - Bottom shelf: 6" above ground - Two shelves at 12" intervals - Mounted on four 5" ball-bearing swivel castors - Colour: Hammertone Seagreen, Gauge 18 - Anti-corrosive treatment before painting - Handles on both sides
3) Card Catalogue Cabinet Unit (Steel)	<ul style="list-style-type: none"> - Dimensions: 20" deep, 12 3/4" wide, 10" high with 4 drawers - Drawer dimensions: 5 3/4" x 4 1/2" - Side wall of drawer: 2 1/2" high - Features: Plastic top, label holder, card supporter with spring adjustment, enamel-coated rod with tab - Easy sliding mechanism with gully or ball bearing arrangement - Catch to prevent drawer from falling when drawn out forcefully
4) Dictionary Stands	<ul style="list-style-type: none"> - Height of back: 3'9", height of front: 3'6" (20-degree slope) - Dimensions: 24" wide, 22" deep - Two compartments of 15" height - 4" ground clearance - Wooden bar (1/2" thick) along fore-edge to prevent material from sliding - Thickness of wood: 1" to 1 1/2"
5) Display Stand (Double Faced)	<ul style="list-style-type: none"> - Made from teak wood frame with plywood veneer on all four sides - Overall dimensions: 5'6" high, 4" wide, 15" deep at base, 20" deep at 1' height, 9" depth at the top - 6 horizontal bars (1/2" thick, 2" deep, 4' long) creating five compartments of 10" height - Slanting beams at 35-degree angle to ground - Beams taper upwards, reducing depth at the top
6) Magazine Display Cases (Steel)	<ul style="list-style-type: none"> - Overall dimensions: Height: 5', Breadth: 3', Width: Base: 15", Top: 2 1/2" - Four compartments, 12" high - Ground clearance: 6" - Depth of each compartment: 2" - Each compartment fitted with a longitudinal supporter (6" height) to prevent magazines from falling - Colour: Hammertone Seagreen, Gauge 15 - Anti-corrosive treatment before painting
7) Periodical Racks (Steel)	<ul style="list-style-type: none"> - Overall dimensions: Height: 70", Width: 36", Depth: 15" - Four slanted shelves at 45-degree angle (13 1/2" apart) - Horizontal sliding trays (4" deep) with four label holders per tray - Lower tray: 10" above ground - Plank fixed 6" above ground
8) Reading Chairs (Wooden)	<ul style="list-style-type: none"> - Round backs - Cane seats: 19" x 19" x 18"

	<ul style="list-style-type: none"> - Rubber cushions for legs - Seat height from ground: 18" - Wood thickness for legs: 2" x 2" - Backrest bars: 1" x 1 1/2" thick - Overall height of back: 33"
9) Reading Tables	<ul style="list-style-type: none"> - Dimensions: 7' x 3'6" x 2'1/2" - Large 7' x 4' x 2" thick plank supported by four strong round legs (2" at the top, tapering down to 3" at the bottom) - Rubber stubs on legs for ease of shifting

INDIAN PUBLIC LIBRARY GUIDELINES

Category	Specification
Library Finance	
Government Contribution	Central and state governments should allocate 6-10% of the education budget for libraries.
Library Cess	No definite recommendation for library cess, but a recommendation was made for a levy of ₹1 to ₹10 per annum by all public libraries.
Administrative Machinery	
National Commission	A National Commission on Library and Information Services should be established.
Bureau of Library Services	A Bureau of Library and Information Services should be created at the central level.
Directorates and Committees	State-level directorates of libraries and library committees should be established.
Library Personnel	
Central Libraries	One post per 2,000 literate population for central libraries at state/divisional/district/city levels.
Professional Staff	40% of the total staff in central libraries should be professional, compared to 33% in other public libraries.
Adequate Staff for Central Libraries	Staff should be provided for: (a) Administrative Services Division (b) Technical Services Division (c) Reader Service Division
Building Specifications	
Gross Area per 25,000 Population	21,520 sq. ft. (0.86 sq. ft. per person), in line with international standards, but exceptions apply for central libraries serving large areas.
Building Design Brief	A brief should be prepared by the librarian for: (a) Functional qualities of the building (b) Space for different divisions (c) Logical placement of sections
Physical Facilities	
Illumination	All floors should have uniform illumination levels.
Study Cubicles	No separate study cubicles should be provided.

Steel vs. Wooden Racks	Steel racks should be preferred over wooden racks in stack areas and reading rooms due to durability.
Book Capacity	Book capacity should be calculated at the rate of 120 volumes per 11 sq. ft. of floor area.
Furniture and Fittings	Specifications for library furniture and fittings are provided in detail by the guidelines.

LIBRARY NETWORKS

Library Network	Established	Key Features
Delhi Public Library (DPL)	1951	<ul style="list-style-type: none"> - Busiest public library in Southeast Asia. - Developing Libraries Network (DELNET), formerly known as Delhi Library Network, established in 1988. - Compilation of Union Catalogues (Books, Periodicals, etc.) and multiple databases. - Provides e-mail services to 243 member libraries.
Calcutta Library Network (CALIBNET)	1993	<ul style="list-style-type: none"> - First library network in India.
Madras Libraries Network	1993	<ul style="list-style-type: none"> - Set up under INSDOC initiative for libraries in and around Chennai.
The Alliance Library System (ALS)	1994	<ul style="list-style-type: none"> - Based in Illinois, USA. - Partnership of nearly 300 academic, public, school, district, and special/corporate libraries.
Western Library Network (WLN)	1972	<ul style="list-style-type: none"> - Initially called Washington Library Network. - Started with 10 libraries in Washington State.
Research Libraries Information Network (RLIN)	1978	<ul style="list-style-type: none"> - Consortium of research libraries, including Stanford University, California. - Dedicated to solving common problems in collection development, management, access, and preservation.
UTLAS International		<ul style="list-style-type: none"> - Covers over 2,500 institutions in Canada and the U.S. - Services include online catalogue, public access, acquisition control, retrospective conversion, and serial control.
BLAISE (British Library Automated Information Services)	1977	<ul style="list-style-type: none"> - One of the world's largest networks. - Offers online services: <ol style="list-style-type: none"> 1) BLAISE-LINK (biomedical and toxicology info in MEDLINE, TOXLINE). 2) BLAISE-LINE (bibliographical data in all subjects). 3) BLAISE-RECORDS (records from OCLC).

RANGANATHAN'S GENERAL STAFF FORMULA

Staff Type	Formula	Explanation
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Professional Staff	SB + SE + SL + SM + SP + SR + ST	Sum of staff required in various professional roles
Non Professional Skilled Staff	$\frac{B}{30,000} + \frac{S}{100}$	Based on book and staff ratios for skilled roles
Unskilled Staff	$\frac{SB}{4} + \frac{SC}{2} + SL + \frac{SM}{4} + \frac{SP}{2} + \frac{SR}{8}$ $\frac{A}{20,000} + \frac{D}{500} + \frac{B}{60,000} + \frac{S}{100} + \frac{V}{30,000}$	Based on ratios and workload in various sections

Explanation of Variables in Staff Formula of S.R Ranganathan

Variable	Description	Formula
SB	Number of persons in book section	A/6000
A	Number of books accessioned in a year	-
SC	Number of persons in circulation section	G/1500
G	Number of gate-hours for a year	-
SL	Number of persons as librarian and deputies	HW/1500
HW	(Library hours per day) x (Working days per year)	-
SM	Number of persons in maintenance section	A/3000
SP	Number of persons in periodicals section	P/500
P	Number of periodicals currently taken	-
SR	Number of persons in reference section	(R/150) x (W/250)
R	Number of readers per day	-
W	Number of working days	-
ST	Number of persons in technical section	(A + 40D)/2000
D	Number of periodicals abstracted and indexed in a year	-

UGC LIBRARY COMMITTEE STAFFING NORMS

Library Section	Staff Requirement
Book Section	1 person for every 6,000 volumes added in a year
Periodical Publications Section	1 person for every 500 current periodicals taken
Documentation Section	1 person for every 1,000 entries prepared in a year
Technical Section	1 person for every 2,000 volumes added in a year
Maintenance Section	1 person for every 6,000 volumes added in a year, 1 person for every 500 volumes to be replaced daily, and 1 person for every 100,000 volumes in the library
Administrative Section	Minimum of 1 library accountant, 1 steno-typist, and 1 correspondence clerk
Reference Section	1 person for every 50 readers (excluding textbook collection users) per day
Circulation Section	1 person for every 1,500 hours of gate operation per year
Supervisory Section	1 Librarian and 1 Assistant or Deputy Librarian

Unskilled Staff	1 Cleaner for every 30,000 volumes, 1 Attendant for every 6,000 volumes added per year, every 500 periodicals taken, and each shift in the Circulation Section
Revised Norms (as per Ranganathan's suggestions)	Updated Requirements
Periodical Publications Section	1 person for every 1,500 periodicals subscribed
Documentation Section	1 person for every 30 research workers (to supplement INSDOC/NISCAIR and international abstracting services)
Maintenance Section	1 person for every 1,500 newly added volumes, and 1 person for every 50,000 volumes maintained

UGC WORKSHOP (KHANDALA) 1979 RECOMMENDATIONS FOR COLLEGE LIBRARY STAFFING

Category	Staff Requirement
Basic Staff for College Library For a college with 500 students and 5,000 volumes:	
Librarian	1
Assistant Librarian	1
Library Assistant	2
Library Clerk-cum-Typist	1
Library Attendants	3
Total Basic Staff	8
Additional Staff Requirements: Based on college size and library collection growth:	
For every additional 500 students	1 Library Assistant and 2 Library Attendants
For every additional 25,000 volumes (up to 80,000 volumes)	1 Library Assistant and 2 Library Attendants
When student enrollment exceeds 2,000	1 additional Assistant Librarian and 1 additional Library Clerk

UGC-SANCTIONED STAFF REQUIREMENTS FOR DELHI UNIVERSITY DAY AND EVENING COLLEGE LIBRARIES

Position	Day College Library Staff (up to 15,000 Volumes)	Day College Library Staff (15,000-30,000 Volumes)	Day College Library Staff (30,000+ Volumes)	Evening College Library Staff (up to 15,000 Volumes)	Evening College Library Staff (30,000+ Volumes)
Librarian	1	1	1	1	1
Professional Assistant	1	1	1	-	-
Library Assistant	2	2	2	2	2
Typist	1	1	1	1	1
Attendants	2	3	4	2	4 (50% in senior scale)

Additional Staff

If college enrollment > 1,500 students

2 additional attendants are provided for day college libraries

If library operates for 12 hours

2 additional attendants for day college libraries

PLAGIARISM detection software

Software	Developer	First Public Release	License	Deployment Options
Copyscape	Indigo Stream Technologies, Ltd.	2004	Freemium	SaaS
Grammarly	Grammarly, Inc.	2016	Freemium	SaaS
HelioBLAST	Virginia Bioinformatics Institute		Free of charge	Web service
iThenticate	iParadigms	2004	Proprietary	SaaS
PlagScan	PlagScan GmbH	2008	Limited	SaaS, On-Premises
PlagTracker	Devellar	2011	Freemium	SaaS
Turnitin	iParadigms	1997	Proprietary	SaaS
Unicheck	Unicheck	2014	Proprietary	SaaS

DRILLBIT PLAGIARISM DETECTION SOFTWARE

Aspect	Details
Software Name	DrillBit Plagiarism Detection Software
Developer	DrillBit SoftTech India Pvt Ltd.
Company Location	Bangalore, India
Year Founded	2016
Product Type	Cloud-based Plagiarism Detection Software
Target Audience	Students, Researchers, Faculties/Professors/Teachers
Technology Used	AI and ML technology, Proprietary AI-based matching algorithm
Functionality	Detects similarities, manipulations, and text formatting irregularities
Compliance	ISO 27001:2013, SOC 2 Type II, GDPR
Recognition	Evaluated by AICTE technical expert committee, selected for empanelment with AICTE NEAT 3.0
Key Event	MoU signing ceremony with AICTE, NAAC, and other dignitaries on 29th July 2023 at Pragati Maidan, New Delhi

IMPORTANT QUOTES

Quote/Concept	Said By
"Some books are to be tasted, others to be swallowed, and some few to be chewed and digested."	Francis Bacon
"To provide the best books to the maximum readers at the least cost."	Melvil Dewey

Shera's Two Laws of Cataloguing: 1. No cataloger will accept the work of any other cataloger. 2. No cataloger will accept his/her own work six months after cataloging.	Jesse Shera
"Censorship, like charity, should begin at home; but unlike charity, it should end there."	Clare Booth Luce
"Knowing that I loved my books, he furnished me, from mine own library with volumes that I prize above my dukedom."	William Shakespeare (The Tempest, Act I, Scene II)
"Libraries are the wardrobes of literature, whence men, properly informed, may bring forth something for ornament, much for curiosity, and more for use."	William Dyer
"A library book...is not, then, an article of mere consumption but fairly of capital."	Thomas Jefferson
"Libraries are as the shrines where all the relics of the ancient saints are preserved and reposed."	Francis Bacon
New Laws of Librarianship: <ul style="list-style-type: none">- Libraries serve humanity.- Respect all forms by which knowledge is communicated.- Use technology intelligently to enhance service.- Protect free access to knowledge.- Honor the past & create the future.	Michael Gorman
Ranganathan's Five Laws: <ol style="list-style-type: none">1. Books are for use.2. Every reader his book.3. Every book its reader.4. Save the time of the reader.5. A library is a growing organism.	S.R. Ranganathan
"Information is the manager's main tool, indeed the manager's 'capital,' and it is he who must decide what information he needs and how to use it."	Peter F. Drucker
"Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?"	T.S. Eliot
"A democratic society depends upon an informed and educated citizenry."	Thomas Jefferson
"Information is the currency of democracy."	Thomas Jefferson
"There is not such a cradle of democracy upon the earth as the Free Public Library."	Andrew Carnegie
"No place affords a more striking conviction of the vanity of human hopes than a public library."	Samuel Johnson
"Order is heaven's first law."	W.C.B. Sayers
"Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it."	Dr. Samuel Johnson
"There is far greater peril in buying knowledge than in buying meat and drink."	Plato
"Nothing could be more damaging to a growing department than to neglect its library or give it a low priority."	The Kothari Education Commission
"The notation does not make a classification, but it may mar it."	H.E. Bliss
"Burn the libraries, for their value is in this one book (the Koran)."	Caliph Omar
"Knowledge comes, but wisdom lingers."	Alfred Tennyson
"Reference is to library service, what intelligence is to the military."	Louis Shores
"Its ideal should be: If a book is here, it's good; if it's good, it's here."	Francis K.W. Drury

"All creation is the most beautiful of books."	Martin Luther
"The library is the heart of all the university's work."	Dr. S. Radhakrishnan (University Education Commission)
"Demand for books should be differentiated according to its value, volume, and variety."	L.R. McColvin
"We need libraries founded by the people, supported by the people, enjoyed by the people."	William Ewart
"Bibliography is an art and also a science."	Arundell Esdaile
"Information science contributes to the theoretical base for the librarian's operations."	Jesse H. Shera
"There is no greater sin than the omission of an index."	E.B. Osborn
"It should be our endeavor to locate at least one library in every village."	Pt. Jawaharlal Nehru
"Students were the body of the university, the administration was the head, the teachers were the soul, and the library the heart."	Dr. C.D. Deshmukh
"Classification made the ape a man."	E.C. Richardson
"I choose free libraries as the best agencies for improving the masses of the people."	Andrew Carnegie
"Book classification is a mechanical time-saving operation for the discovery of knowledge."	Wyndham Hulme
"Books are the legacies that a great genius leaves to mankind."	Joseph Addison
"Best books in the largest number at the least cost."	Melvil Dewey

Important MARC Tags

Tag Group	Description	Examples
0XX	Control info, classification, codes, etc.	020: International Standard Book Number, 022: International Standard Serial Number
1XX	Main entries	100: Main Entry - Personal Name, 110: Main Entry - Corporate Name
2XX	Titles, edition, imprint	240: Uniform Title, 245: Title Statement
3XX	Physical description, etc.	300: Physical Description, 310: Current Publication Frequency
4XX	Series statements	-
5XX	Notes	504: Bibliography, Etc. Note, 520: Summary, Etc.
6XX	Subject access fields	600: Subject Added Entry - Personal Name, 650: Subject Added Entry - Topical Term
7XX	Added entries	700: Added Entry - Personal Name, 710: Added Entry - Corporate Name
8XX	Series added entries, holdings, location, etc.	800: Series Added Entry - Personal Name, 852: Location
9XX	Locally defined uses	900 - Equivalence or Cross-Reference Personal Name (R) 910 - Equivalence or Cross-Reference Corporate Name (R)

Examples of Key Fields:

Field Code	Field Name
100	Main Entry - Personal Name (NR)
110	Main Entry - Corporate Name (NR)
245	Title Statement (NR)
250	Edition Statement (NR)
260	Publication, Distribution, etc. (Imprint) (R)
300	Physical Description (R)
504	Bibliography, Etc. Note (R)
520	Summary, Etc. (R)
600	Subject Added Entry – Personal Name (R)
700	Added Entry – Personal Name (R)
856	Electronic Location and Access (R)

LIBRARY SOFTWARE'S

Software	Development/Release Details
KOHA	First open-source library automation package. Developed in 1999 by Katipo Communication Ltd, New Zealand, for Horowhenua Library Trust; first implemented in January 2000.
NewGenLib	Library automation software developed in India. Developed by Kesavan Institute of Information and Knowledge Management (KIIKM) and Verus Solutions Pvt Ltd in March 2005. Initially proprietary, became open source on January 9, 2008.
Evergreen	Initiated in September 2006 by Georgia Public Library System (GPLS) to support Public Information Network for Electronic Services (PINES). Open-source consortia-quality ILS.
CDS/ISIS	Developed in 1985. Integrated menu-driven software package by UNESCO.
SOUL	SOUL 1.0: Released during CALIBER 2000; SOUL 2.0: Released January 2009; SOUL 3.0: Released February 2021. Compliant with MARC 21, Unicode, NCIP 2.0, SIP 2 protocols. Compatible with MS-SQL and MySQL. Integrated library management software by INFLIBNET Centre, India.
VTLS	Developed in 1985 by Dr. Vinod Chachra at Virginia Tech. First to implement linked Authority Control, US MARC Format for Holdings and Locations, multilingual interfaces.
Mandarin M5	Latest version M5 v5.8.0 released November 2024. Advanced cataloging, improved performance, responsive mobile interface, compatibility with Microsoft Edge, RIS format support. Web-based library management system offering global access through web browsers.
Libsys	1. Founded in 1984 by Anil Jain; major milestones include RFID system (2003), LSNetX DIY e-commerce platform (2015). LSEase: A library management system based on client-server architecture, requiring minimal data entry and offering easy data backup for large databases. 2. LSAcademia: A total ERP solution for managing academic campuses, available in two editions: School Edition and Standard Edition. 3. LIBSYS7: A library management solution designed to enhance the complete library experience with value-added features and services.

	<p>4. LSDigital (DRMS): A document digitization software for multi-access management, storage space reduction, and preservation.</p> <p>5. LSmart: Solutions based on RFID and Em technologies.</p> <p>6. LSNet.in: An online bookstore with a comprehensive database based on an eCommerce platform.</p> <p>LSNetX.com: A DIY E-commerce platform for offline businesses to go online.</p>
E- Granthalaya	<p>A digital platform developed by the National Informatics Centre (NIC), Ministry of Electronics and Information Technology, Government of India for government libraries.</p> <p>Version History:</p> <ol style="list-style-type: none"> 1. Version 1.0 (2003): <ul style="list-style-type: none"> • Technology/Platform: Visual Basic 6/ASP/HTML • DBMS: MS SQL Server 7 • Edition: Public Library Edition 2. Version 2.0 (2005): <ul style="list-style-type: none"> • Technology/Platform: Visual Basic 6/ASP/HTML • DBMS: MS SQL Server 2000 • Edition: Government Libraries Edition 3. Version 3.0 (2007): <ul style="list-style-type: none"> • Technology/Platform: VB.NET/ASP.NET 2.0 • DBMS: MS SQL Server 2005 • Edition: Network Edition 4. Version 4.0 (2015): <ul style="list-style-type: none"> • Technology/Platform: ASP.NET 4.0/AJAX/JQUERY/JSON/SilverLight • DBMS: PostgreSQL (Open Source) • Edition: Enterprise Edition
SANJAY	<ol style="list-style-type: none"> 1. Based on CDS/ISIS (Version 2.3): CDS/ISIS, originally developed by the International Labour Office in 1964 for IBM 360 mainframes, was later rewritten by UNESCO. 2. Development: A team from DESIDOC created SANJAY by adding: <ul style="list-style-type: none"> • 35 PASCAL programs • 25 additional menus Integrated these with CDS/ISIS to form the SANJAY package.
MAITRAYEE	<ol style="list-style-type: none"> 1. Developed by: CMC Ltd. for the CALIBNET project. 2. Purpose: Designed for library computerization for participating libraries in the CALIBNET network. 3. Commissioned by: NISSAT, a government agency.
PMB (PhpMyBibli)	<ol style="list-style-type: none"> 1. PMB (PhpMyBibli) is an open-source Integrated Library System (ILS). 2. Started by François Lemarchand in October 2002 as the Director of the Public Library of Agneaux, France. 3. Currently managed by PMB Services. 4. Web-enabled ILS using XAMP architecture (supports multiple operating systems). 5. Includes Apache as the web server, PHP as the programming environment, and MySQL as the RDBMS. 6. Employs AJAX to support an interactive and collaborative framework. First released in 2003.

	<p>7. Initially available under the GNU GPL license.</p> <p>8. Now offered under the CeCILL free software license.</p> <p>9. The latest version (Version 8) introduces significant innovations.</p> <p>10. Integration of Artificial Intelligence in 2024 marks a major development in PMB</p>
SLIM	<p>Algorhythms Consultants is a leading provider of library and archive automation solutions. Headquartered in Pune, India, it has been offering technology solutions for library and archive management for over three decades (since 1986).</p> <p>Key Milestones in Algorhythms' Journey:</p> <ol style="list-style-type: none"> 1. 1986: SLIM DOS Library Management System 2. 1994: SLIM++ Library Management System 3. 2001: SLIM21 Standalone Library Management System 4. 2007: SLIM Library RFID System 5. 2015: iPROX21 eResource Access Management System 6. 2016: iSLIM Web-based Library Management System 7. 2017: iARCH Archival Management System 8. 2019: SLIM OPAC Mobile Application, iSLIM Toy Library Management System 9. 2020: iSLIM Cloud-based Library Management System
ABCD <i>(Automation of Libraries and Centres of Documentation.)</i>	<ol style="list-style-type: none"> 1. ABCD is a comprehensive web-enabled integrated library automation system developed by BIREME, Brazil. 2. The system uses CDS/ISIS as the backend database and WWWISIS as the middleware. 3. The web interface for CDS/ISIS, known as WWWISIS, was developed by BIREME in 2005. 4. In 2010, BIREME developed ABCD by utilizing CDS/ISIS as the database and WWWISIS as the CGI script to create a web-enabled Integrated Library System (ILS).

Distribution Policy	Large Library Systems	Medium Range Library Systems	Small Library Systems
Closed Source ILSs (Commercial)	VIRTUA ILS , LibSys	SLIM 21, SOUL	AUTOLIB, NIRMALS
Closed Source ILSs (Freeware)	ABCD, WEBLIS	e-Granthalaya	LAMP, Librarian
Open-Source ILSs (Freely Available)	Evergreen ILS, Koha (version 3.x)	Koha (version 2.x), NewGenLib	Emilda, PHPMyLibrary

IMPORTANT EVENTS

Year	Event
1942-46	First LC printed catalogue published (167 vols.)
1945	Dictionary Catalogue Code (Ranganathan)
1950	British National Bibliography (begins publication, classified arrangement using chain procedure of subject indexing)
1950	Farradane's Relational Indexing
1951	LC (Introduced 'limited cataloguing' policy ceased 1964)
1951	British Standard Institution (BS 1749: Specification for alphabetical arrangement and the filling order of numerals and symbols, 1st ed. published, 12th ed. 1969)
1953	Lubetzky (cataloguing rule and principles. Very important principles – 'conditions' rather than 'cases')
1953	Mortimer Taube's Uniterm Indexing
1954	IFLA Working Group on the coordination of Cataloguing Principles (ICCP was to blossom from this working party)
1955	Ranganthan's Headings and canons (Important comparative study of five codes of cataloguing rules)
1956	First printed cards from BNB.
1956	Filling Rule for the dictionary catalogs of the LC rewritten
1956	LC (Cataloguing In Source experiment now Cataloguing In Publication)
1958	KeyWord In Context (H.P.Luhn & H.Ohlman)
1959-1966	British Museum General catalogue published in photolitho edition (263 vols.)
1960	E.J.Coates Subject catalogues: headings and structure
1960	Lubetzky Code of cataloguing rules in unfinished draft
1961	First automated production of catalogue cards (The Douglas Aircraft Co. introduces the first cataloguing application of computers, although computers had been used with post-coordinate indexing since 1950s)
1961	Science Citation Index (Eugene Garfield from Institute for Scientific Information, Philadelphia, started from 1963)
1961	International Conference on Cataloguing Principles, Paris
1963	King report on automation and the LC led to MARC project
1965	The LC National Program for Acquisition and Cataloguing (NPAC) otherwise known as the 'Shared Cataloguing Program' began
1965	First computerization of catalogues in the UK (the public libraries of Camden and Barnet)
1966	Brasenose conference on the automation of libraries (computer can produce a 'reactive catalogue' that it can generate from a common bibliographic store a system of catalogues that are all mutually compatible)
1966	LC (Library of Congress) Project MARC begun
1967	AACR-I (Library Association/American Library Association/Canadian Library Association. Project of LC) (based upon 'conditions of authorship' and not types of publication)

Year	Event
1967	Permuted Subject Index
1967	Introduction of Standard Book Number in UK
1967	Attention focused on possibility of microform catalogues
1967	UK MARC project (BNB)
1967	OCLC network set up
1968	LC National Union catalogue began publication

1968	MARC II Project begun (LC)
1969	Origin of ISBD
1969	First UK network (BLCMP)
1969	PRECIS (Derek Austin)
1970	Introduction of ISBN & ISSN (International Standard Organization)
1970	Canadian rules for non-book materials
1971	CIP was started [LC]
1971	Introduction of International Standard Bibliographical Description (IFLA)
1971	PRECIS (Derek Austin) first used in BNB
1972	CCF Project begun (UNESCO)
1973	Library Association National Council for Educational Technology (LANCET) rules for non-book materials
1973	Books in English first published (An ultra-microfiche bibliography based upon MARC)
1974	ISBD introduced
1975	British Library formed
1975	UNESCO's initiatives for Bibliographic Exchange Format
1977	BLAISE goes live (British Library)
1977	UNIMARC Project begun (IFLA)
1978	AACR-II (Library Association/American Library Association/Canadian Library Association. Project of LC & BL) (Emphasizes integrated approach to cataloguing different library materials) <Condition Code>
1980	ALA filing rules (New version of 1968 rules) (American Library Association)
1980	BLAISE filing rules (British Library)
1980	LC filing rules
1981	British Library/Library of Congress/National Libraries of Canada and Australia adopted AACR-II

Year	Event
1981	LC policy of 'superimposition', whereby new rules are only used if they do not lead to conflict with existing headings, to be abandoned. Replaced by 'compatible headings'
1981	Concise AACR-II (Michael Gorman)
1982	Compatible headings policy of LC ceases
1982	Microcomputer applications in libraries for cataloguing and indexing becoming more widespread
1984	CCF 1st ed. Introduced (2nd ed. 1998 in two vols. CCF/B & CCF/F)
1988	AACR-II Revised Edition (Library Association/American Library Association/Canadian Library Association. Project of LC & BL)
1992-1995	The IFLA Study Group on Functional Requirements for Bibliographic Records (FRBR) developed an entity relationship model as a generalized view of the bibliographic universe, intended to be independent of any cataloguing code (e.g. AACR2, the German RAK [Regeln fur die alphabetische Katalogisierung] and RICA [Regole Italiane di Catalogazione per Autore] or implementation)
1993	AACR-II 2nd Revised Edition (Library Association/American Library Association/Canadian Library Association. Project of LC & BL)
1997	International Conference on the Principles and Future Development of AACR (organized by Joint Steering Committee (American Library Association, Australian Committee on Cataloguing, British Library, Canadian Committee on Cataloguing, Chartered Institute of Library and Information Professionals and Library of Congress)
2007	13 digit ISBN introduced

2009	Resource Description and Access (RDA) new standard which will be the successor to AACR2 (Kiorgaard & Kartus, Coyle & Hillman)
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LIBRARY AND INFO SCIENCE RELATED IMPORTANT BOOKS AUTHOR

No.	Book Title	Author/Editor
1	Encyclopaedia of Librarianship	Thomas Landau (Editor)
2	Five Laws of Library Science	S.R. Ranganathan
3	Organisation of Knowledge in Libraries and Subject Approach to Books	Henry Evelyn Bliss
4	Grammar of Classification (4th ed., 1955)	W.C. Berwick Sayers
5	A History of Library Association 1877-1977	W.A. Munford
6	And Master of None (Autobiography, 1955)	Fremont Rider
7	Foundations of Education for Librarianship (1972)	Jasse H. Shera
8	A Librarian's Memories: Portraits and Reflections (1952)	E.A. Savage
9	Punjab Library Primer	Asa Don Dickinson
10	American Library Resources and British Library Resources	R.B. Downs
11	Memoirs of Libraries, including a Handbook of Library Economy	Edward Edwards (1858)
12	Studies in Co-ordinate Indexing (Vols. 1-6)	Mortimer Taube
13	Ranganathan: A Pattern Maker: A Syndetic Study of His Contributions	A.P. Srivastava
14	Manual of Library Classification and Shelf Arrangement	J.D. Brown (1898)
15	Sayer's Manual of Classification for Librarians (5th ed.)	Arthur Malthy (Editor)
16	Prolegomena to Library Classification (3rd ed., 1967)	S.R. Ranganathan
17	Principles of Book Classification	E. Wyndham Hulme
18	Simple Library Cataloguing	Susan G. Akers
19	List of Subject Headings for Small Libraries	M.E. Sears (Editor)
20	Rules for a Dictionary Catalogue	C.A. Cutter (1876)
21	A Modern Outline of Library Classification	J. Mills (1960)
22	Classification: Theoretical and Practical	E.C. Richardson (1901)
23	The Theory of Book Selection for Public Libraries	L.R. McColvin (1925)
24	Books That Changed the World	Robert Bingham Downs (1956)
25	Introduction to Cataloguing and the Classification of Books	Margaret Mann (1943)
26	Manual of Library Economy	J.D. Brown (Editor: R. Northwood Lock)
27	The BSO Manual: The Development, Rationale and Use of the Broad System of Ordering	Eric Coates, Geoffrey Lloyd, Dusan Simandl
28	Indian Library Literature: An Annotated Bibliography	Ram Gopal Prasher (1971)
29	Making of Librarianship in Pakistan	Syed Jalaluddin Haider (Editor)
30	March of Library Science: Kaula Festschrift	V. Venkatappaiah (Editor)
31	Library Science Today: Ranganathan Festschrift, Vol. I & II	Vol. I: P.N. Kaula, Vol. II: A.K. Dasgupta
32	The University Library: The Organisation, Administration, and Functions of Academic Libraries	Louis Round Wilson, Maurice F. Tauber
33	Decimal Classification and Colon Classification in Perspective	R.S. Parkhi

DEWEY DECIMAL CLASSIFICATION

Year	Event/Activity	Details/Key People
1873–1885	Early development of Dewey Decimal Classification	Melvil Dewey develops classification system while at Amherst College.
1876	Publication of first edition	A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library (44 pages).
1885	Second edition published	Decimal Classification and Relativ Index (314 pages).
1891–1921	Editorial staff change	May Seymour becomes editor until her death in 1921.
1922	Lake Placid Club Educational Foundation takes over administration	Melvil Dewey's foundation manages administrative affairs.
1952	Establishment of Decimal Classification Editorial Policy Committee	Part of ALA's Cataloging and Classification division.
1949–1951	Editorial staff change	Milton Ferguson serves as editor.
1958	16th edition published	Edited under an agreement between Library of Congress and Forest Press.
1970s–1980s	Changes in copyright and administration	Lake Placid Club Foundation controls copyrights after May Seymour's death.
1988	OCLC acquires Dewey Decimal Classification and Forest Press	Trademark and copyrights associated with Dewey Decimal Classification system.
2003	Trademark infringement case against Library Hotel	OCLC sues Library Hotel for using Dewey system as hotel theme, settled.
2013	Michael Panzer appointed Editor-in-Chief of Dewey Decimal Classification	OCLC's Michael Panzer leads the editorial team.
2017	Dewey Decimal Classification stops printing English edition	WebDewey becomes the primary format for updates.
2009–2015	Experimental version of Dewey in RDF available at dewey.info	Experimental release, no longer available since 2015.
1895–2012	Abridged editions published for small libraries	Abridged versions available, Abridged Edition 15 published in early 2012.
1894	First abridged edition of Dewey Decimal Classification published	Designed for smaller libraries.
1988–Present	OCLC maintains Dewey Decimal Classification system	Editorial staff based at Library of Congress and OCLC. Work reviewed by Decimal Classification Editorial Policy Committee.

In addition to the full version, a single-volume abridged edition designed for libraries with 20,000 titles or fewer has been made available since 1895. The last printed English abridged edition, Abridged Edition 15, was published in early 2012.

DDC Editions

Full edition	Publication year	Abridged edition	Publication year
1st	1876		
2nd	1885		
3rd	1888		
4th	1891		
5th	1894	1st	1895
6th	1899		
7th	1911		
8th	1913	2nd	1915
9th	1915		
10th	1919		
11th	1922	3rd	1926
12th	1927	4th	1929
13th	1932	5th	1936
14th	1942	6th	1945
15th	1951	7th	1953
16th	1958	8th	1959
17th	1965	9th	1965
18th	1971	10th	1971
19th	1979	11th	1979
20th	1989	12th	1990
21st	1996	13th	1997
22nd	2003	14th	2004
23rd	2011	15th	2012

DDC Main Classes

Class Number	Subject Area
000	Computer Science, Information, and General Works
100	Philosophy and Psychology
200	Religion
300	Social Sciences
400	Language
500	Pure Science
600	Technology
700	Arts and Recreation
800	Literature
900	History and Geography

6 Tables in DDC:

Table Number	Description
T1	Standard Subdivisions
T2	Geographic Areas, Historical Periods, Biography
T3	Subdivisions for the Arts and Literatures
T3A	Subdivisions for Works by or about Individual Authors
T3B	Subdivisions for Works by or about More than One Author
T3C	Notation to Be Added Where Instructed in Table 3B, 700.4, 791.4, 808–809
T4	Subdivisions of Individual Languages and Language Families

T5	Ethnic and National Groups
T6	Languages

Relative Index:

The Relative Index is an alphabetical index to the DDC system, helping users locate books by topic. It directs users to class numbers instead of page numbers, making it easy for catalogers and library users to find specific subjects in a Dewey-classed library.

COLON CLASSIFICATION

Year	Edition	Key Developments and Features
1924-1928	Conceptualization & Development	Ranganathan conceives the Colon Classification (CC) and applies it at Madras University Library. He is inspired by the Meccano toy kit and mathematical techniques.
1933	First Edition (Published)	First official publication by Madras Library Association. First application of CC at Madras University Library.
1937	Prolegomena to Library Classification	Ranganathan publishes his foundational theory and methods for CC, outlining his principles in library classification.
1939	Second Edition	Refines and clarifies the theory and methods of CC, published after Ranganathan's <i>Prolegomena to Library Classification</i> .
1950	Third Edition	Published after Ranganathan's move to Delhi University. Further development of classification theory. Introduces CC to more libraries in Delhi.
1952	Fourth Edition	Introduces the theory of "five and only five fundamental categories" (PMEST: Personality, Matter, Energy, Space, and Time) to generalize facets across all classifications.
1957	Fifth Edition	Proposed as two volumes (basic and depth), but only the basic version was published. Recognizes the non-viability of publishing depth schedules in book form.
1960	Sixth Edition	Represents the pinnacle of Ranganathan's classification system. Widely adopted in Indian library schools. The CC is discussed at the International Study Conference.
1963	Sixth Edition (Amended)	The amended edition becomes the most popular and stable, used extensively in Indian library schools.
1987	Seventh Edition (Posthumous)	Published posthumously and edited by M.A. Gopinath. Considered by many to be inconsistent in structure and notation, with some parts discarded by the Indian library profession.

Three versions of Colon Classification

Version	Year	Key Developments and Features
Version 1	1933-50	Rigidly Faceted Era: Facet formula was rigid and predetermined. The colon was the only connecting symbol for all facets. Dummy colons were used to represent absent facets. This made class numbers unwieldy and prone to misplacement.
Version 2	1950-63	Analytico-Synthetic Era: The fourth edition marked a milestone with the introduction of the five fundamental categories (PMEST). Each category had a distinct connecting symbol, simplifying and shortening the notation.

Version 3	1963-87	Freely Faceted Era: Focused on studying the properties and structure of the universe of subjects. Introduced sub-categories and flexibility in the system, allowing easy creation of new isolates and sector notation. This version was more adaptable and self-perpetuating, allowing for continuous addition of new subjects.
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Notation in Colon Classification (CC-7) Total-74 (60 semantic and 14 indicator)

Notation	Count	Description
A/Z (Roman capitals)	26	Capital Roman letters used in notation.
Δ (Greek delta)	01	Greek letter delta used in notation.
0/9 Indo-Arabic numerals (decimal)	10	Indo-Arabic numerals used decimaly.
a/z (Roman lowercase)	23	Lowercase Roman letters (excluding i, l, and o) used in notation.
* " ← Indicator symbols with anteriorising value	03	Symbols like asterisk, double quotation mark, and backward arrow with anteriorising value.
& '. : ; , - = → + () Ordinary indicator symbols	11	Common punctuation and symbols such as ampersand, quotation mark, colon, semicolon, comma, hyphen, equal sign, arrow, plus, and parentheses.

Complex subjects and main classes in Colon Classification (CC):

Complex Subjects and Phase Relations

A **complex subject** is a two-phased subject that depicts interdisciplinary relations. Six types of phase relations have been identified, with each having an indicator symbol and an example:

Type	Indicator Digits	Example	Class Number
General	a	Relation of political science with history	V&aW
Bias	b	Psychology for doctors	S&bL
Comparison	c	Physics compared with chemistry	C&cE
Difference	d	Difference between Christianity and Islam	Q,6&d7
Tool	e	Mathematical physics	C&eB
Influencing	g	Influence of Mahatma Gandhi on John Lennon	NR,56,NwN40&gzG

These phase relations can occur at three levels:

- **Interdisciplinary relation:** Between two main classes (e.g., chemistry and physics).
- **Intra-facet relation:** Between two foci of the same facet (e.g., Islam and Judaism).
- **Intra-array relation:** Between two isolates of the same array within a facet (e.g., Catholics and Protestants).

There are 18 possible relations (6 types x 3 levels). Phase relations supplement other relationships depicted in the classification system (e.g., PMEST, citation order, hierarchy, and helpful-sequence principles). The **ampersand (&)** symbol is used for phase relations, and each of the 18 relations has its own indicator symbol (a/y).

Main Classes and Their Order

Ranganathan's classification system emphasizes the structure and order of knowledge. He categorized knowledge based on its evolution into academic disciplines, with a focus on **systematic arrangement** and **helpful sequence**.

Order of Disciplines in Colon Classification:

1. Science and Technology
2. Humanities
3. Social Sciences

Each discipline is further subdivided into sub-disciplines, and the main classes within each discipline are arranged meticulously based on principles of knowledge development.

Main Classes in Colon Classification:

Main Class	Discipline
A/B	Science/Mathematics
C/D	Physics/Engineering
E/F	Chemistry/Chemical Technology
G/H	Biology/Geology
I/J	Botany/Agriculture
K/L	Zoology/Medicine
M	Useful Arts
Δ	Spiritual Experience & Mysticism
N/O/P	Fine Arts/Literature/Language
Q/R	Religion/Philosophy
S/T	Psychology/Education
U/V	Geography/History
W/X	Political Science/Economics
Y/Z	Sociology/Law

Additionally, Generalia and Form classes precede these main classes:

Generalia & Form Classes	Classes
A	Bibliography
K	General encyclopedias
M	General periodicals
P	Conference proceedings
W	Biographies
Z	Generalia classes
1	Universe of knowledge
2	Library science
3	Book science
4	Mass communication
8	Management science

Structured overview of facet analysis,

Facet	Description
Facet Analysis	Core concept of Ranganathan's CC philosophy. Complex subject class numbers are synthesized, not pre-made, based on the subject content and form of the document.
Steps in Facet Analysis	Eight steps to create a coextensive class number based on subject content and form. It starts with determining the specific subject, separating the subject from common isolates, and classifying it using PMEST categories.
Determining Specific Subject	Intuitive, trial-and-error process involving document details like title, subtitle, preface, and table of contents. Flair and experience are key.

Postulated Classes	Main and basic classes are pre-determined, and every subject belongs to one basic subject forming the first facet.
Categories (PMEST)	The categories are:
[T] Time	Represents chronological, diurnal, or seasonal aspects like century, period, or season.
[S] Space	Geographical, political areas, or population clusters (e.g., Asia, countries, cities, valleys).
[E] Energy	Refers to actions, activities, processes, or problems (e.g., treatment, diseases, teaching).
[M] Matter	Material of the entity, with three sub-categories: - Matter-Property [M-P] - Matter-Method [M-M] - Matter-Material [M-Mt]
[P] Personality	The most concrete but elusive category, referring to individuals, groups, institutions, and even abstract concepts like art styles, ideologies, laws. Identified through the Residual Method (after identifying the other categories).
Round and Levels	Categories may occur more than once in different rounds or levels. Each category has a specific round and may have multiple levels within it (e.g., [P] in literature as Language, Form, Author, Work).
Facet Formula (PMEST)	A logical citation order for categories, arranged by dependency principles. The general facet formula includes categories like [1P1], [1M1], [1E1], followed by space, time, etc. Categories repeat across rounds and levels.
Wall-Picture Principle	The master principle guiding the arrangement of categories: categories must depend on the primary facet, typically the main class or its amplification.
Absolute Syntax	The search for a natural order of facets that is independent of linguistic syntax, which may structure ideas universally. Ranganathan believed in a universal "absolute syntax" for arranging facets, but empirical evidence is lacking.
Rounds and Levels	Defines the hierarchy of categories and their recurrence within different facets. Categories like [P], [M], and [E] can occur in various rounds and levels. Time and Space only occur in the final round.

Synthesis process in Colon Classification

Category	Details
Synthesis	Analysis is followed by synthesis in analytico-synthetic classification.
Subject Facets	Subject is separated from common isolates, which are added after the subject facets with their indicator symbols.
Types of Common Isolates	Anteriorising Common Isolates (ACIs) and Posteriorising Common Isolates (PCIs).

Anteriorising Common Isolates (ACIs)

ACI	Description
a	Bibliography
k	Encyclopedia
m	Periodical
r	Administration Report
s	Statistics
t	Commission Report

x	Collected Works
---	-----------------

Posteriorising Common Isolates (PCIs)

PCI	Description	Indicator Symbol
b14	Calculation	, (comma)
aTc	Critical Study	; (semicolon)
t	Educational/Research Institutions	: (colon)

Examples of Class Numbers

Class Number	Description
2;5'P"a	Bibliography of twenty-first century library classification
2;5"k1,P1	ISKO Encyclopedia of Knowledge Organization (IEKO)
2;5.1,g,N9	International Society for Knowledge Organization (ISKO)
2.73,g,M7	American Library Association (ALA)
2.73,g,M7;1;3	Functions of the President of the ALA
2,J1*Z.73:aT	Assessment of U.S. Academic Libraries
E*Z:aR	Research in Chemical Sciences
Y;aa	Theories of Sociology

Complex Examples

Class Number	Description
O,111,2J64,M+V"aN	20th-century bibliography on <i>Merchant of Venice</i> by Shakespeare
L-L-9Un4-9E,32;4:6	Homeopathy for treatment of heart diseases of old people living in high altitudes
T,18.1=CN48,g,9N"v	A history of the Association of Commonwealth Universities
V,73;1844X=M1'P17←N75	The US armament policy towards Pakistan from 1975 to 2017
V,44;181=(Q,7)	India's foreign policy towards Muslim countries
Y"a"m73,N	Sociological abstracts

Shelf Arrangement and APUPA Pattern

Concept	Details
Shelf Arrangement	<ul style="list-style-type: none"> - Follows Principle of Inversion (reverse order of PMEST on shelves). - Arranged from general to specific: [T] → [S] → [E] → [M] → [P]. - Order: General treated generally → General treated specially → Special treated generally → Special treated specially.
Ordinal Value	<ul style="list-style-type: none"> - Ordinal values of semantic and indicator symbols determine order. - Ascending order: a/z, 0/9, A/Z.
APUPA Pattern	<ul style="list-style-type: none"> - Represents Alien → Penumbral → Umbral → Penumbral → Alien. - Alien (A): Related but not the subject. - Penumbral (P): Bibliographies, dictionaries, advances, critical studies. - Umbral (U): Core subject documents.
APUPA Arrangement	<ul style="list-style-type: none"> - Logical, pedagogically useful, reduces noise in locating documents. - Ensures a seamless continuum across all classes.
Index	<ul style="list-style-type: none"> - 6th edition: Multiple subject indexes. - 7th edition: No attached indexes.

	<ul style="list-style-type: none"> - CINDEX: Machine-readable index in UNESCO's WINISIS (2002), awaiting print integration.
Book Numbers	<ul style="list-style-type: none"> - Chronological book number system inspired by W.S. Biscoe and Melvil Dewey. - Formula: [L][F][Y].[V]-[S];[C]:[g]. - Components: Language, Form, Year, Volume, Supplement, Copy, Commentary. - Example: 2017 French book of quotations → x122Q7.
Key Characteristics	<ul style="list-style-type: none"> - Systematic, brief, mnemonic. - Integral part of Colon Classification. - Helps organize books and associated materials (e.g., volumes, copies, supplements).

Year-wise Evolution of UDC

Universal Decimal Classification (UDC) History

1. Origins of UDC (1885 - 1907)

1.1 Early Development (1885 - 1895)

- **1885**: Paul Otlet (Belgian barrister) and Henri La Fontaine start working on the *Universal Bibliographic Repertory*.
- **1895**: Otlet contacts Melvil Dewey and obtains permission to translate the **Dewey Decimal Classification (DDC)** into French.

1.2 First Edition (1902 - 1907)

- The **first analytico-synthetic classification** system is developed by Otlet and La Fontaine.
- **1902 - 1907**: The first edition of UDC is published in French as *Manuel du Répertoire Bibliographique Universel*.
- It contained **33,000 subdivisions**.

2. Expansion and Refinement (1927 - 1951)

2.1 Second Edition (1927 - 1933)

- Work continued after **World War I**, focusing on revising **science and technology** sections.
- **Editor**: Frits Donker Duyvis (Dutch Patent Office).
- Published from **1927 - 1933** with **70,000 subdivisions**.
- UDC now offered independently under the name **Classification Décimale Universelle (CDU)**.

2.2 Third Edition (1934 - 1951)

- First **German edition** published, edited by **Carl Walther**.
- Expansion to **140,000 subdivisions**.

3. Institutional Changes and Global Adoption (1931 - 1992)

3.1 Organizational Evolution

- **1931**: *Institut International de Bibliographic (IIB)* renamed *Institut International de Documentation (IID)*.
- **1937**: IID becomes **Federation Internationale de Documentation (FID)**.
- **1988**: FID renamed to **International Federation for Information and Documentation (FID)**.
- **2000**: FID dissolved, and UDC continued under UDCC.

3.2 Management and Maintenance

- **1949**: Introduction of *Extensions and Corrections to the UDC* (biannual, later annual updates).
- **1985**: *UDC International Medium Edition (BS 1000M: 1985)* published.
- **1991**: FID forms *Task Force for UDC System Development* to restructure the management.

3.3 Formation of UDC Consortium (UDCC) (1992 - 1993)

- **1992:** UDC Consortium (UDCC) formed with FID, BSI, and four other publishers.
- **1 January 1992:** Ownership of UDC officially transferred to UDCC.
- **1993:** *Master Reference File (MRF)* database created with **60,000 entries** (later expanded to 220,000 entries).
- UDCC takes over **official maintenance and management**.

Types of UDC Licences

There are two main types of standard UDC licences:

1. **UDC Publishing Licence** – Covers rights for publishing and distributing the UDC scheme.
2. **UDC MRF Use Licence** – Covers rights for using the UDC Master Reference File for:
 - Pre-publication work:** Translation and preparation of a UDC edition before publishing.
 - Internal reference:** Local system use within an organization or integration into an information system.
 - Institutional research:** Exploring UDC's potential in specific applications and services.
 - Educational purposes:** Use in library schools and similar institutions.
 - Personal use:** Individual study and research

UDC Tables Overview

Auxiliary Tables

Symbol	Meaning	Table	Example
+	Coordination, Addition	Table 1a	004+005 (Computer Science + Management)
/	Consecutive Extension	Table 1a	61/69 (Technology from 61 to 69)
:	Simple Relation	Table 1b	94:32 (History related to Economics)
::	Order-fixing	Table 1b	81::39 (Language in relation to Ethnography)
	Subgrouping	Table 1b	5[541] (Chemistry within Science)
*	Non-UDC Notation	Table 1h	*621.39 (External classification notation)
A/Z	Direct Alphabetical Specification	Table 1h	A Shakespeare (Directly classifying Shakespeare)

Common Auxiliary Numbers

Symbol	Description	Table Name	Example
=...	Language	Table 1c	81=111 (English Language)
(0...)	Form	Table 1d	82(091) (Historical Aspects of Literature)
(1/9)	Place	Table 1e	94(410) (History of the UK)
(=...)	Ethnicity/Nationality	Table 1f	930.85(=112.2) (History of Germanic Peoples)
"..."	Time	Table 1g	94"1945" (History of the Year 1945)
-0...	General Characteristics	Table 1k	7-051 (Artists as a Profession)

Main Tables

UDC Number	Subject Area
0	Science, Knowledge, Computer Science, Information, Documentation, Librarianship
1	Philosophy, Psychology
2	Religion, Theology
3	Social Sciences

5	Mathematics, Natural Sciences
6	Applied Sciences, Medicine, Technology
7	Arts, Recreation, Entertainment, Sport
8	Language, Linguistics, Literature
9	Geography, Biography, History

UDC Timeline in Table Format

Year	Event
1885	Paul Otlet and Henri La Fontaine start work on the Universal Bibliographic Repertory.
1895	Otlet obtains permission from Melvil Dewey to translate the Dewey Decimal Classification (DDC) into French.
1902-1907	First edition of UDC, titled <i>Handbook to the Universal Bibliographic Repertory</i> , published in French.
1927-1933	Second edition released with major revisions and expansion to 70,000 subdivisions.
1931	Institute International de Bibliography (IIB) renamed as Institute International de Documentation (IID).
1934-1951	Third edition (first in German) published; subdivisions increase to 140,000.
1937	IID renamed as Federation Internationale de Documentation (FID).
1949	First authorized amendments issued in <i>Extensions and Corrections to the UDC</i> (biannual, later annual).
1985	<i>UDC International Medium Edition (BS 1000M: 1985)</i> published in two parts – Systematic Tables (1985) and Alphabetical Subject Index (1988).
1988	FID renamed as International Federation for Information and Documentation.
1991	Task Force for UDC System Development formed to discuss restructuring and future management.
1992	UDC Consortium (UDCC) established; takes over ownership of UDC on 1 January.
1993	Master Reference File (MRF) database with 60,000 entries completed.
2000	FID dissolved; UDCC continues as the primary authority managing UDC.
Present	Last Release UDC MRF12 (December 2018) Next Release UDC MRF13 (planned release 2023) <i>Currently UDC Editor-in-Chief: Dr Aida Slavic and UDC Editor: Dr Ana Vukadin The UDC Consortium (UDCC) is a self-funded, non-profit organization managing the development and distribution of the Universal Decimal Classification since 1992.</i>

List of Desktop Publishing Software

Software	Developer(s)	Latest Stable Version	Year	License
Affinity Publisher	Serif Europe	2.3.0 (Nov 30, 2023)	2019	Proprietary
Apache OpenOffice Writer	Apache Software Foundation	4.1.15 (Dec 22, 2023)	2002	Apache License 2.0
Canva	Canva Pty Ltd	Rolling updates	2013	Proprietary SaaS
Collabora Online	Collabora	24.04.11.4 (Jan 16, 2025)	2016	MPL-2.0 and others

CorelDRAW	Corel	24.5 (Sep 18, 2023)	1989	Proprietary
InDesign	Adobe	CC 2024 (Oct 2024)	1999	Proprietary Trialware
LibreOffice Draw	The Document Foundation	25.2.0 (Feb 6, 2025)	2011	LGPL v3
LyX	The LyX Team	2.4.3 (Jan 16, 2025)	1995	GPL v2
Marq	Draper	Rolling updates	2013	Proprietary SaaS
Microsoft Publisher	Microsoft Corporation	2021 (Oct 5, 2021)	1991	Proprietary Trialware
Pages	Apple Inc.	13.2 (Sep 21, 2023)	2005	Proprietary
QuarkXPress	Quark, Inc.	2024 20.0.0 (Nov 14, 2023)	1987	Proprietary
Scribus	The Scribus Team	1.6.1 (Jan 7, 2024)	2003	GPL
The Print Shop	Broderbund	23.1 (2009)	1984	Proprietary

Note: Important One are highlighted

List of Office Suites

Name	Developer	Year	License	Cost
Ability Office	Ability Plus Software	1995	Proprietary	Commercial
Apache OpenOffice	Apache Software Foundation	2012	Apache-2.0	Free
Calligra Suite	KDE	2011	LGPL, GPL	Free
Collabora Online	Collabora	2019	MPL-2.0	Free
Feng Office	Feng Office	2007	AGPL-3.0-only	Free
GNU TeXmacs	Joris van der Hoeven	1996?	GPL-3.0-or-later	Free
Google Workspace	Google	2006	Proprietary	Commercial
Hancom Office	Hancom	1998	Proprietary	Commercial
iWork	Apple Inc.	2005	Proprietary	Free
LibreOffice	The Document Foundation	2010	MPL-2.0	Free
Microsoft 365	Microsoft	2015	Proprietary	Commercial
OfficeSuite	MobiSystems	2004	Proprietary	Commercial
OnlyOffice	Ascensio Systems	2010	AGPL	Commercial
Polaris Office	Infraware Inc.	2011	Proprietary	■
SoftMaker Office	SoftMaker	2012	Proprietary	Commercial
Tiki Wiki CMS Groupware	Tiki Association	2002	LGPL-2.1-only	Free
WordPerfect Office	Corel	1991	Proprietary	Commercial
WPS Office	Kingssoft	1988	Proprietary	Commercial
Zimbra	Synacor	2005	Proprietary	Commercial
Zoho Workplace	Zoho Corp.	2005	Proprietary	Commercial

Note: Important One are highlighted

List Of Word Processor Programs

Name	Developer	Year	License	Cost
Apache OpenOffice Writer	Apache Software Foundation	2012	Apache-2.0	No cost
AppleWorks	Apple Inc.	1991	Proprietary	Cost
Applix Word	Vistasource Inc.	1992	Proprietary	Cost
Collabora Online Writer	Collabora	2019	MPL-2.0	No cost
CopyDesk	Quark, Inc.	1991	Proprietary	Cost
EZ Word	Andrew Project	1985	MIT-CMU	No cost
FrameMaker	Adobe Systems Incorporated	1986	Proprietary	Cost
Gobe Productive	Gobe Software	1998	Proprietary	Cost
Google Docs	Google	2006	Proprietary	No cost
Hangul	Haansoft	1989	Proprietary	Cost
InCopy	Adobe Systems Incorporated	1999	Proprietary	Cost
KOffice KWord	Reginald Stadlbauer, KDE	1998	GPL, LGPL	No cost
LibreOffice Writer	The Document Foundation	2011	MPL-2.0	No cost
Lotus Symphony	Lotus Software	2008	Proprietary	No cost
Lotus Word Pro	Lotus Software	1989	Proprietary	Cost
LyX	The LyX Project	1995	GPL-2.0-or-later	No cost
Mariner Write	Mariner Software	1996	Proprietary	Cost
Microsoft Word	Microsoft Corporation	1983	Proprietary	Cost
Microsoft Works	Microsoft Corporation	1987	Proprietary	Cost
NeoOffice Writer	Planamesa Software	2003	GPL	No cost
OpenOffice.org Writer	Sun Microsystems, Oracle Corporation	2002	Apache-2.0	No cost
Pages	Apple Inc.	2005	Proprietary	Cost
TextEdit	Apple Inc.	1993	BSD-3-Clause	No cost
TextMaker	SoftMaker	2012	Proprietary	Cost
WPS Office	Kingsoft	2012	Proprietary	Cost
WordPad	Microsoft Corporation	1995	Proprietary	No cost

Note: Important One are highlighted

List of text editors

Name	Developer	Year	Cost	License
Acme	Rob Pike	1993	No cost	MIT, GPL-2.0-only, LPL-1.02
Atom	GitHub	2014	No cost	MIT
Bluefish	Bluefish Development Team	1999	No cost	GPL-3.0-or-later
Brackets	Adobe Systems	2012	No cost	MIT
Coda	Panic	2007	Commercial	Proprietary

ConTEXT	ConTEXT Project Ltd	1999	No cost	BSD-3-Clause
CudaText	UVViewSoft	2015	No cost	MPL-2.0
GNU Emacs	Richard Stallman	1984	No cost	GPL-3.0-or-later
Notepad++	Don Ho	2003	No cost	GPL-3.0-or-later
SciTE	Neil Hodgson	1999	Commercial	HPND
Sublime Text	Jon Skinner, Sublime HQ	2008	Commercial	Shareware
Visual Studio Code	Microsoft	2015	No cost	MIT

Note: Important One are highlighted

Essential TCP/IP Ports Cheat Sheet

Each port serves a specific function in communication, data transfer, or remote access. Below is a breakdown of the most commonly used ports and their real-world applications.

Protocol with RFC Code	TCP/UDP	Port No.	Description
File Transfer Protocol (FTP) (RFC 959)	TCP	20/21	Used for file transfers; control on port 21, data on port 20.
Secure Shell (SSH) (RFC 4250-4256)	TCP	22	Secure remote command-line access to network devices.
Telnet (RFC 854)	TCP	23	Unsecured remote command-line access.
Simple Mail Transfer Protocol (SMTP) (RFC 5321)	TCP	25	Used to send emails between servers and from clients.
Domain Name System (DNS) (RFC 1034-1035)	TCP/UDP	53	Translates domain names to IP addresses.
Dynamic Host Configuration Protocol (DHCP) (RFC 2131)	UDP	67/68	Assigns IP addresses dynamically in a network.
Trivial File Transfer Protocol (TFTP) (RFC 1350)	UDP	69	Simplified file transfer without session establishment.
Hypertext Transfer Protocol (HTTP) (RFC 2616)	TCP	80	Used by web browsers to access web pages.
Post Office Protocol (POP3) (RFC 1939)	TCP	110	Retrieves emails from a server, usually deleting them after.
Network Time Protocol (NTP) (RFC 5905)	UDP	123	Synchronizes system clocks over the Internet.
NetBIOS over TCP/IP (NBT) (RFC 1001-1002)	TCP/UDP	137/138/139	Used for Windows network communication.
Internet Message Access Protocol (IMAP) (RFC 3501)	TCP	143	Retrieves emails while keeping them on the server.
Simple Network Management Protocol (SNMP) (RFC 1901-1908, 3411-3418)	TCP/UDP	161/162	Monitors and manages network devices.
Border Gateway Protocol (BGP) (RFC 4271)	TCP	179	Manages large-scale routing on the Internet.

Lightweight Directory Access Protocol (LDAP) (RFC 4510)	TCP/UDP	389	Accesses and maintains directory information.
Hypertext Transfer Protocol Secure (HTTPS) (RFC 2818)	TCP	443	Secure version of HTTP using SSL/TLS.
Lightweight Directory Access Protocol Secure (LDAPS) (RFC 4513)	TCP/UDP	636	Secure version of LDAP using SSL/TLS.
FTP over TLS/SSL (RFC 4217)	TCP	989/990	Secure version of FTP using SSL/TLS.

Note: Important One are highlighted

📌 Overview of IANA

Category	Details
Full Form	Internet Assigned Numbers Authority (IANA)
Founded	December 1988
Founder	U.S. Department of Commerce
Headquarters	Los Angeles, USA
Owner	ICANN (Internet Corporation for Assigned Names and Numbers)
Key Person	Kim Davies (Current Manager) as on 22 Feb 2025

🌐 Functions of IANA

Function	Description
IP Address Allocation	Assigns IP blocks (IPv4 & IPv6) to Regional Internet Registries (RIRs).
Autonomous System Numbers (ASN)	Allocates numbers for BGP (Border Gateway Protocol) to manage internet routing.
DNS Root Zone Management	Maintains domain extensions like .com, .org, .gov, etc.
Protocol Assignments	Manage port numbers, media types, and other internet identifiers.
DNSSEC Key Management	Secures DNS root zone with cryptographic keys.

📅 History & Administration

Year	Event
1972	Vint Cerf & Jon Postel at UCLA proposed a socket number catalog (RFC 322).
1988	The term "IANA" first appeared in RFC 1083.
1995	The National Science Foundation allowed Network Solutions to charge a fee for domain names.
1998	ICANN took over IANA operations.
2014	U.S. announced transition of IANA functions to a global community.
2016	IANA stewardship officially transferred from the U.S. government to the private sector.

 Global Internet Governance

Organization	Region Managed
ARIN	North America
RIPE NCC	Europe, Middle East, Central Asia
APNIC	Asia-Pacific
LACNIC	Latin America & Caribbean
AFRINIC	Africa

 Exam Tip:

Remember IANA's role using "**DIP-DNS**"

- ✓ Domain Names
- ✓ IP Addresses
- ✓ Protocols
- ✓ DNSSEC

Note: Important One are highlighted

Publication Identifiers and Their Governing Organizations

Identifier	Developer(s)	Organization	Introduced	Structure	Example
ISBN International Standard Book Number	Gordon Foster	International ISBN Agency	1970	13 digits (978/979 prefix) or 10 digits (before 2007)	ISBN 978-1533573940
ISSN International Standard Serial Number	ISO	ISSN International Centre	1975	8-digit code (XXXX-XXXX)	ISSN 1476-4687
DOI Digital Object Identifier	International DOI Foundation	International DOI Foundation	October 1997	Prefix (10.xxxx) + unique suffix	10.1000/182
SICI Serial Item and Contribution Identifier	National Information Standards Organization (NISO)	National Information Standards Organization (NISO)	1996	ISSN + publication date + volume + issue + article code	Varies
BICI Book Item and Component Identifier	National Information Standards Organization (NISO)	National Information Standards Organization (NISO)	1997	ISBN + section details	Similar to SICI but for books
PII Publisher Item Identifier	Various publishers	Various Publishers	1996	17-character alphanumeric string	S0362152900011995

ISTC International Standard Text Code	International ISTC Agency	International ISTC Agency	2009	16-character alphanumeric code	ISTC 0A9-2002-12B4A105-7
SBN Standard Book Number	UK Publishers Association	UK Publishers Association (Historical)	1966	9-digit code (converted to ISBN)	0-330-28498-3
ASIN Amazon Standard Identification Number	Amazon	Amazon	1996	10-character alphanumeric code	B01DUV1T00
ISMN International Standard Music Number	International ISMN Agency	UK Branch of IAML put Forwarded by Alan Pope ,Malcolm Lewis and Malcolm Jones	1993	13 digits (979-0 prefix)	ISMN 979-0-060-11561-5
ISRC International Standard Recording Code	International Federation of the Phonographic Industry (IFPI)	International Federation of the Phonographic Industry (IFPI)	1986	12-character alphanumeric code	ISRC US-S1Z-99-00001
ISWC International Standard Musical Work Code	CISAC (International Confederation of Societies of Authors and Composers)	CISAC	1995	'T' prefix + 9 digits + check digit	ISWC T-034.524.680-1
CODEN Unique Identifier for Scientific Publications	Charles Bishop (Chronic Disease Research Institute)	International CODEN Service (Chemical Abstracts Service)	1953	6-character alphanumeric code	JACSAT (for <i>Journal of the American Chemical Society</i>)
PMID PubMed Identifier	National Library of Medicine (NLM)	National Library of Medicine (NLM)	1997	Unique numeric identifier	PMID: 31452104
PMCID PubMed Central Identifier	National Institutes of Health (NIH)	National Institutes of Health (NIH)	2000	PMCID prefix + unique number	PMCID: PMC6789102
Zbl (Zentralblatt)	Zentralblatt MATH (zbMATH) identifier.				

Pii (Publisher Item Identifier)		The PII specification is no longer in common use (2010).			
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Note: Important One are highlighted

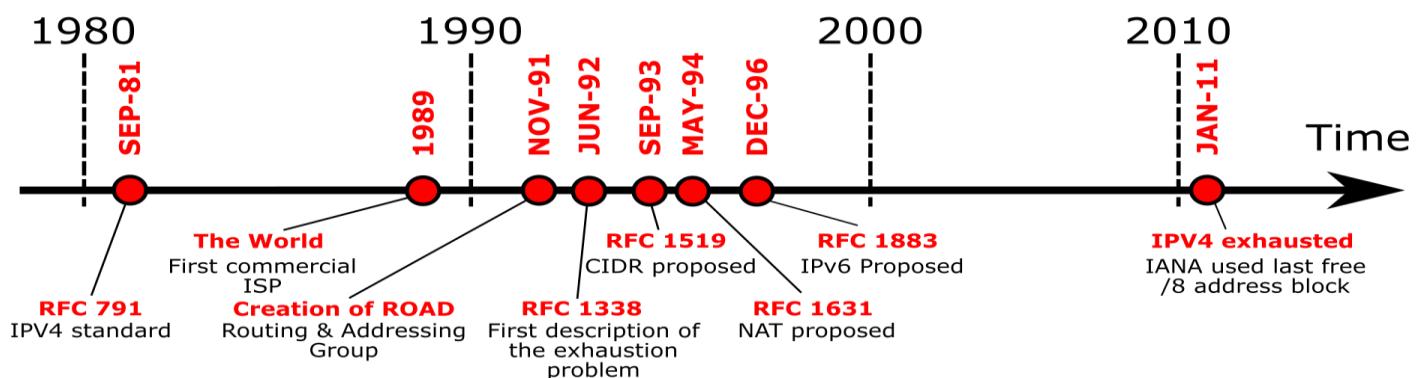
Internet Protocol Suite - Layered Structure

Layer	Protocols
Application Layer	BGP, DHCP (v6), DNS, FTP, HTTP (HTTP/3), HTTPS, IMAP, IRC, LDAP, MGCP, MQTT, NNTP, NTP, OSPF, POP, PTP, ONC/RPC, RTP, RTSP, RIP, SIP, SMTP, SNMP, SSH, Telnet, TLS/SSL, XMPP, CoAP, TFTP, WebSocket, Gopher, Finger, RTMP, WHOIS, SFTP, SCP, Syslog, BitTorrent, mDNS, SDP, ICE, WebRTC, Diameter, RADIUS, S/MIME, X.400, X.500, SMB, NFS, ACAP, NNTP, LPR, iSCSI
Transport Layer	TCP, UDP, DCCP, SCTP, RSVP, QUIC, RUDP, MPTCP, LTP, ATP
Internet Layer	IPv4, IPv6, ICMP (v6), ND, PECN, IGMP, IPsec, GRE, Mobile IP, MPLS, LISP
Link Layer	ARP, Tunnels, PPP, MAC, SLIP, RARP, L2TP, STP, VTP, VLAN, HDLC, Frame Relay, ATM, FDDI, IS-IS, LLDP, CDP

IPv4 Key Information

IPv4 uses 32-bit addresses which limits the address space to 4294967296 (232) addresses. IPv4 reserves special address blocks for private networks ($224 + 220 + 216 \approx 18$ million addresses) and multicast addresses ($2^{28} \approx 268$ million addresses).

Attribute	Details
Full Name	Internet Protocol Version 4 (IPv4)
Abbreviation	IPv4
Purpose	Internetworking Protocol
Developer(s)	DARPA
Introduced	1981 (44 years ago)
Influenced	IPv6
OSI Layer	Network Layer
RFC(s)	791



Special IPv4 Address Ranges

Type	CIDR Block	Address Range	Use Case
Local Network	0.0.0.0/8	0.0.0.0 – 0.255.255.255	Refers to the local network
Loopback	127.0.0.0/8	127.0.0.0 – 127.255.255.255	localhost communication/testing
Private A	10.0.0.0/8	10.0.0.0 – 10.255.255.255	Large private networks
Private B	172.16.0.0/12	172.16.0.0 – 172.31.255.255	Medium private networks
Private C	192.168.0.0/16	192.168.0.0 – 192.168.255.255	Home & small business networks
Link-Local	169.254.0.0/16	169.254.0.0 – 169.254.255.255	Auto-assigned IPs (No DHCP)
Multicast	224.0.0.0/4	224.0.0.0 – 239.255.255.255	Used for multicast traffic
Reserved	240.0.0.0/4	240.0.0.0 – 255.255.255.254	Reserved for future use
Broadcast	255.255.255.255	255.255.255.255	Limited broadcast address

Note: Important One are highlighted

IPv6 Key Information

Summary

IPv6, developed by the IETF, was designed to replace IPv4 and solve address exhaustion while improving security, efficiency, and scalability. It introduces a fixed 40-byte header, eliminates NAT, and provides enhanced addressing and routing capabilities. However, IPv4 and IPv6 are not directly interoperable, requiring transition mechanisms.

Attribute	Details
Full Name	Internet Protocol Version 6 (IPv6)
Abbreviation	IPv6
Purpose	Internetworking Protocol
Developer(s)	Internet Engineering Task Force (IETF)
Introduced	December 1995 (29 years ago)
Based on	IPv4
OSI Layer	Network Layer
RFC(s)	2460, 8200

IPv6 Packet Structure

Component	Details
Packet Parts	Header + Payload
Header Size	40 bytes (fixed)
Fields	Source & Destination Address, Traffic Class, Hop Count, Next Header
Fragmentation	No router fragmentation: Path MTU Discovery required
Payload Size	Max 64 KB, up to 4 GB with Jumbo Payload option
Extension Headers	Used for routing, fragmentation, security (IPsec), and more

IPv6 Addressing

Feature	Details
Address Length	128 bits
Structure	64-bit Routing Prefix + 64-bit Interface Identifier
Loopback Address	::1 (equivalent to 127.0.0.1 in IPv4)

Unicast Address Types	Global, Link-Local (FE80::/10), Unique Local (FC00::/7)
Multicast	FF00::/8

IPv6 Address Representation & Shortening

- **Standard Format:** 2001:0db8:0000:0000:0000:ff00:0042:8329
- **Leading Zero Removal:** 2001:db8:0:0:0:ff00:42:8329
- **Zero Compression (::):** 2001:db8::ff00:42:8329
- **Loopback Address:** ::1
- **In URLs (due to colons in IPv6):** Use square brackets → [2001:db8::1]:8080

IPv6 vs. IPv4 Comparison

Feature	IPv4	IPv6
Address Size	32-bit (4.3 billion IPs)	128-bit (340 undecillion IPs)
Header Size	Larger, complex	Smaller, optimized
Addressing	Manual/DHCP required	Auto-configuration supported
Security	Optional (IPsec)	Mandatory (IPsec built-in)
NAT Required?	Yes	No
Fragmentation	Routers can fragment	Hosts must handle it (Path MTU Discovery)

Thanks for Reading!

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